

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

PETITION OF INDIANA-AMERICAN)
WATER COMPANY, INC. FOR)
AUTHORITY TO INCREASE ITS)
RATES AND CHARGES FOR WATER)
AND SEWER UTILITY SERVICE,)
FOR APPROVAL OF NEW)
SCHEDULES OF RATES AND)
CHARGES APPLICABLE)
THERE TO, FOR APPROVAL OF)
CHANGES TO RULES AND)
REGULATIONS APPLICABLE TO)
SUCH SERVICE, AND FOR)
AUTHORIZATION TO DEFER IN A)
PENSION/OPEB BALANCING)
ACCOUNT OVER- AND UNDER-)
RECOVERIES FOR PASS)
THROUGH TO CUSTOMERS)

CAUSE NO. 43680

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MAS REPORT 2

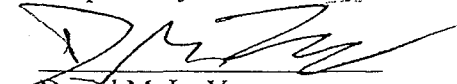
Vol. 1 of 3

VOLUME V

THE INDIANA OFFICE OF UTILITY CONSUMER COUNSELOR

OCTOBER 27, 2009

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Final Report
Volume I of III

Stratified Management & Operations Audit
of
Pennsylvania-American Water Company
for the
Pennsylvania Public Utility Commission
Bureau of Audits

Docket No. D-06MGT029

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I. Introduction and Report Summary

This chapter represents a summary introduction and results of the stratified management and operations audit of Pennsylvania-American Water Company (PAWC) completed by Schumaker & Company in 2008 for the Pennsylvania Public Utility Commission (PaPUC). It includes a synopsis of the objectives and scope of our work, a functional evaluation summary, and several exhibits, for amplification purposes, that encapsulate the recommendations and estimated benefits associated with these improvement opportunities.

These management and operational reviews, which are required of certain companies pursuant to 66 Pa. C.S. § 516 (a) and (c), come under the PaPUC's general administrative power and authority to supervise and regulate all public utilities in the Commonwealth, 66 Pa. C.S. § 501(b). More specifically, the PaPUC can investigate and examine the condition and management of any public utility, as stated in 66 Pa. C.S. § 331(a). More specifically, the objectives of this management audit include the determination of what improvements, if any, can be accomplished in the utility's management and operations pursuant to Public Utility Code 66 Pa. C.S. § 522(b). Specifically, it is intended that the management audit encourage economies, efficiencies, or improvements that benefit PAWC and its ratepayers and identify which, if any, cost saving measures can be instituted. The ultimate purpose is to explore economically practical opportunities for giving ratepayers lower rates and/or better service.

The remaining report chapters contain a discussion of our findings, conclusions, and recommendations for each discrete area of review within the scope of the audit. They include:

- ◆ Chapter II – Executive Management, External Relations, & Human Resources
- ◆ Chapter III – Financial Management
- ◆ Chapter IV – Support Services
- ◆ Chapter V – Water Operations
- ◆ Chapter VI – Corporate Governance
- ◆ Chapter VII – Corporate Culture, Management Structure, and Staffing Levels
- ◆ Chapter VIII – Affiliated Interests
- ◆ Chapter X – Customer Service
- ◆ Chapter XI – Operational Performance
- ◆ Chapter XII – Phase III Water Operations – Distribution Business Systems
- ◆ Chapter XIII – Phase III Human Resources
- ◆ Appendix A – Data & Statistics
- ◆ Appendix B – Glossary

These chapters provide the detailed facts and analyses that support, and provide context for, the recommendations we have made. Following the report body are two appendices – one (*Appendix A*) provides supporting financial and operating data and statistics, while the other (*Appendix B*) provides a glossary of terms.



The findings and recommendations contained in this audit report are the findings and recommendations of the consultant only and are not necessarily agreed to by PAWC or the PaPUC.

A. Objectives and Scope

The objectives of the stratified management and operations audit were established by the PaPUC in its request for proposal (RFP). The objectives of this audit were threefold:

- ♦ To provide the PaPUC, PAWC management, and the public with an assessment of the economy, efficiency, and effectiveness of PAWC's operations, management methods, organization, practices, and procedures.
- ♦ To identify opportunities for improvement and develop recommendations for improvement or further action.
- ♦ To provide an information base for future regulatory and other inquiries into PAWC's management and operations.

In essence, the PaPUC sought to determine what improvements, if any, could be accomplished in the management and operations of PAWC. Restated, the purpose was to explore and identify practical opportunities for PAWC to achieve improvements for efficient and effective operations, quality services, and cost savings, thus providing PAWC ratepayers the lowest possible rates consistent with above-average service delivery. Our assessment included PAWC's human, physical, and capital resources, its management decisions, compliance with regulatory requirements, and ability to effectively manage outside constraints and events. Given such breadth of scope, the audit encompassed virtually all of PAWC's management and operating functions as well as those American Water Works Company, Inc. (American Water) affiliates supporting PAWC management and operations. Each review was in sufficient detail to facilitate identifying defensible recommendations for cost savings and service quality improvements that were supported by benefit analyses to the extent they were quantifiable. This report provides details of our findings, conclusions, and recommendations for each specified area within the scope of the audit.

The stratified approach and work elements included three phases: 1) an assessment of the condition of major functional areas, 2) a more detailed examination of a number of pre-identified issues, and 3) a focused analysis of issues identified during the diagnostic review. The first stage of the audit consisted of a broad overview of major functional areas and it is referred to as *Phase I – Diagnostic Review*. The second stage of the audit encompassed a detailed review and analysis of six pre-identified issues as set forth in the RFP. This stage is referred to as *Phase II – Pre-Identified Issues Review*. The third stage of the audit consisted of a focused analysis of two (2) issues identified during *Phase I* activities. This stage is referred to as *Phase III – Focused Area Analysis*. Each of these phases concluded with the development of a report that presented our overall findings, conclusions, and recommendations. The actual field work for *Phase I* and *Phase II* began on July 13, 2007 and continued through December 31, 2007. The actual field work for *Phase III* began on February 4, 2008 and continued through April 30, 2008.



During conduct of the review, our consultants allocated considerable time to interviewing PAWC, American Water/American Water Works Service Company (AWWSC), and PaPUC personnel, reviewing reports and documentation, analyzing work flow processes, and assessing any changes being planned by PAWC management. The consultant team focused on identifying areas for improvement, rather than areas where operations performed well. Although some recommendations were associated with areas that had been identified prior to the review as improvement opportunities, we endeavored to formulate more detailed action steps in our recommendations.

This review was performed in accordance with generally accepted auditing standards (GAAS), as contained in the United States General Accounting Office's "Standards for Audit of Government Organizations, Programs, Activities, and Functions," related to issues of management economy, efficiency, and effectiveness as applicable to public utilities ("Yellow Book"), and in accordance with the standards as defined in the RFP and set forth in the National Association of Regulatory Utility Commissioners' "Consultant Standards and Ethics for Performance of Management Analysis."

B. Functional Evaluation Summary

Because the bulk of a management audit is focused on opportunities for improvement, it may give the reader the impression that the utility is seriously deficient. This is not necessarily so, because many of the findings may be of a relatively minor nature. Therefore, it is necessary to put each functional area or issue in perspective to provide the PaPUC, PAWC, and the public with an objective evaluation. The RFP established a set of evaluative criteria for summarizing the results of this audit. The rating is an evaluation of each area's or issue's operating or performance level relative to its optimum as of the time of the audit. The evaluation takes into account PAWC's resources, requirements, constraints, and operating environment. In some areas comparative data is useful and can be used. For the most part, however, each rating is utility specific; i.e., the rating of PAWC cannot be directly compared with that of another utility. Schumaker & Company's overall assessment of each work plan area is presented in the *Functional Evaluation Summary* shown in *Exhibit I-1*, *Exhibit I-2*, and *Exhibit I-3*, with the specific criteria used as follows:

- ◆ *Optimum* – The area is functioning more than adequately and no recommendations were made.
- ◆ *Minor improvement necessary* – The area is generally functioning adequately, but minor improvements are recommended.
- ◆ *Moderate improvement necessary* – The area is generally functioning adequately, but some substantial opportunities for improvement were recommended.
- ◆ *Significant improvement necessary* – The areas is not functioning adequately and many recommendations, requiring considerable effort, need to be implemented to achieve adequate performance.
- ◆ *Major improvement necessary* – The area is not functioning effectively or efficiently and many recommendations need to be implemented to achieve adequate performance. Implementation of these recommendations will have a major effect on cost levels and performance for PAWC.



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Exhibit I-1
Functional Evaluation Summary
Phase I – Diagnostic Review

Chapter	Function	Evaluative Ratings				
		Optimum	Minor Improvement Necessary	Moderate Improvement Necessary	Significant Improvement Necessary	Major Improvement Necessary
II	Executive Management, External Relations, & Human Resources					
	Executive Management			X		
	External Relations			X		
	Human Resources				X	
III	Financial Management		X			
IV	Support Services					
	Information Technology					X
	Transportation Management		X			
	Facilities Management			X		
	Procurement Services		X			
	Materials Management					X
	Risk Management		X			
	Legal Services		X			
V	Water Operations			X		

Exhibit I-2
Functional Evaluation Summary
Phase II – Pre-identified Issues Review

Chapter	Function	Evaluative Ratings				
		Optimum	Minor Improvement Necessary	Moderate Improvement Necessary	Significant Improvement Necessary	Major Improvement Necessary
VI	Corporate Governance		X			
VII	Corporate Culture, Management Structure, and Staffing Levels			X		
VIII	Affiliate Interests			X		
IX	Diversity and EEO				X	
X	Customer Service					X
XI	Operational Performance			X		

Exhibit I-3
Functional Evaluation Summary
Phase III – Focused Area Analysis

Chapter	Function	Evaluative Ratings				
		Optimum	Minor Improvement Necessary	Moderate Improvement Necessary	Significant Improvement Necessary	Major Improvement Necessary
XII	Water Operations - Distribution Business Systems				X	
XIII	Human Resources				X	

C. Summary of Estimated Benefits

The audit produced 114 recommendations, which are contained in this report. A summary of the number of priority items, and estimated benefits, is grouped by phase. Following is a brief explanation of these categories of information.

Priority

To assist PAWC management in developing implementation plans, each recommendation has been assigned a priority of "high," "medium," or "low" according to the following criteria:

- ♦ *High* – Designated recommendations are high priority because of their importance and urgency. These represent significant benefit potential, major improvements to service, or substantial improvements to methods or procedures.
- ♦ *Medium* – Designated recommendations are of medium priority. In some instances, the implementation of these recommendations is expected to provide moderate improvements in profitability of operations, or management methods and performance. In other instances, implementation may provide significant longer-term benefits which are less predictable.
- ♦ *Low* – Designated recommendations reflect a lower priority. In many instances, they should be studied further or implemented sometime during the next few years. Potential benefits are perceived to be either modest or difficult to measure.



Exhibit I-4 summarizes the priority totals for each phase of the audit.

Exhibit I-4
Summary of Priority Totals

	High	Medium	Low
Phase I	26	35	3
Phase II	18	18	2
Phase III	8	3	1
Total	52	56	6

Benefits

The audit identified quantifiable cost savings that range from approximately \$400,000 in one-time savings and \$898,000 to \$1,142,600 in annual savings. Some of these savings could be considered an actual reduction in costs, where the majority of those savings would occur through better deployment and/or use of existing resources. Nonetheless, all of these opportunities should be pursued by PAWC. An overall summary of the one-time and annual costs savings is shown in *Exhibit I-5*.

Exhibit I-5
Summary of Benefits

	One-time Savings	Annual Savings*
Electronic deployment of software updates	N/A	\$100,000 to \$200,000
Server consolidation and increased archiving of data	N/A	\$223,000 to \$267,600
Reduction in inventory levels	\$400,000	\$100,000
Billing overestimates	N/A	\$300,000 to \$400,000
Damage prevention program	N/A	\$100,000
Reduction in Production Department overtime	N/A	\$75,000
Total	\$400,000	\$898,000 to \$1,142,600

* Includes cost savings and/or cost avoidance amounts

In many recommendations, it is not possible or practical at this time to measure "quantitative" benefits. The benefits associated with these recommendations fall primarily into four categories:

- ◆ Reduction in actual costs of operations within a PAWC or American Water area
- ◆ Increase in a revenue source within a PAWC area
- ◆ Change in work flow processes used in the provision of services to PAWC customers on a more effective or efficient basis
- ◆ Change in other processes resulting in good business practices being implemented

Particularly in instances where a new management practice or procedure is recommended (where one either did not exist or was not fully implemented), it may be difficult to estimate the actual benefit to be derived. It is believed, however, that the overall benefit will be improved effectiveness and efficiency of the specified PAWC or American Water area. Additionally, qualitative benefits may occur that cannot be easily quantified. They could include improved effectiveness and efficiency in operations, increased customer satisfaction, additional cost savings, increased revenues, etc. It should also be noted that, because it is not possible in all instances to estimate expected benefits prior to implementation, any implementation plan should include a reliable measurement tool to track benefits after implementation.

Quantifiable benefits (increased revenues or additional cost savings) have been provided where they could be estimated. This quantification is subject to some judgment and would require additional effort beyond the scope of this review to refine the estimates. The actual benefits from these recommendations are, therefore, subject to a degree of uncertainty. For other recommendations the benefits to be derived are of a more qualitative nature or, simply stated, the expectations of prudent management. Those areas where major quantifiable benefits have been identified in the report are described on the following pages.

As PAWC will have varying ways to implement recommendations, Schumaker & Company did not estimate the impact of implementing audit recommendations on PAWC's expense. However, the short-term impact could be considerable. Additionally, implementation of recommendations often requires a phase-in period before benefits can be achieved.

D. Summary of Recommendations

The actual recommendation statements contained in the audit report are shown by phase and work plan area on the following pages. We have also indicated the recommendation number, page number in the report, priority, estimated time-frame to initiate implementation efforts, and estimated benefits following implementation. The details of each recommendation can be found in the individual chapters where the subject matter is evaluated.



Phase I – Diagnostic Review

Chapter II – Executive Management, External Relations, and Human Resources

	Description	Page	Implementation		
			Priority	Initiation Time Frame	Benefits
II-1	Develop a systematic organizational-planning and development process.	29	Medium	6-12 months	Medium
II-2	Develop a formal and integrated strategic-planning process.	30	High	6-12 months	High
II-3	Develop a regional/state operational external-communications plan.	36	Medium	0-6 months	Medium
II-4	Strengthen HR accountability to the PAWC President.	54	High	0-6 months	High
II-5	Assess PAWC's HR needs and staff accordingly.	54	High	0-6 months	High
II-6	Develop an HR service level agreement with AWWSC.	55	High	0-6 months	High
II-7	Develop a Pennsylvania-specific HR scorecard.	55	High	0-6 months	High
II-8	Align HR services to the strategic priorities of PAWC.	55	High	0-6 months	High
II-9	Consider outsourcing technical training.	55	Medium	6-12 months	Medium
II-10	Implement a learning management system.	56	Medium	6-12 months	Medium
II-11	Conduct comprehensive workforce planning for all levels of the organization and provide necessary resources for implementation.	56	High	0-6 months	High
II-12	Complete the Organizational Capability Review for all levels of PAWC management.	56	Medium	6-12 months	High
II-13	Implement a leadership-development program and provide sufficient resources to sustain.	57	Medium	6-12 months	High
II-14	Implement position control.	57	High	0-6 months	High
II-15	Evaluate the costs and benefits associated with a more sophisticated time and attendance system.	57	Medium	6-12 months	Medium
II-16	Analyze recruitment and selection process, implement process improvements, measure performance, and provide additional resources if necessary.	57	Low	6-12 months	Medium

Chapter III – Financial Management

	Description	Page	Priority	Implementation	
				Initiation Time Frame	Benefits
III-1	Research and develop plans for upgrading or replacing the current ERP system.	88	Medium	0-6 months	Medium
III-2	Investigate why key PAWC financial statistics have been deteriorating, develop and implement a plan for improving PAWC's financial health as appropriate.	88	High	0-6 months	High
III-3	Assess the need for internal audits of American-Water-regulated utility operations and develop and implement plans to meet the internal audit requirements.	88	Medium	0-6 months	Medium

Chapter IV – Support Services

	Description	Page	Priority	Implementation	
				Initiation Time Frame	Benefits
IV-1	Expedite efforts to develop a long-range IT plan, and subsequently perform yearly review and update activities.	127	High	0-6 Months	High
IV-2	Update ITS documentation as part of an ongoing program to include all aspects of a well-managed technology organization, including (but not limited to) operational, governance, and project management/QA functions.	128	Medium	6-12 Months	Medium
IV-3	Address organizational issues involving vacancy of director positions, the appropriateness of staffing size of the various ITS groups, and the reporting location of the information systems' security function within American Water's organization structure.	128	High	0-6 Months	High
IV-4	Expand American Water's commitment to project-management principles by requiring all ITS employees who are actively involved in project work to achieve PMP certification and by closely monitoring related activities to ensure that timely progress is made.	129	High	0-6 Months	Medium
IV-5	Enhance the American Water network to enable electronic deployment of software updates to PAWC employees.	129	High	0-6 Months	\$100,000 to \$200,000 annually
IV-6	Improve training and development efforts for ITS employees.	129	Medium	0-6 Months	High



	Description	Page	Priority	Implementation	
				Initiation Time Frame	Benefits
IV-7	Develop a plan to regularly conduct ITS client-satisfaction surveys and implement the first survey in a timely manner.	130	Medium	6-12 Months	Medium
IV-8	Establish ITS service-level agreements with major client groups.	130	Medium	0-6 Months	Medium
IV-9	Implement a relevant ITS scorecard.	130	High	0-6 Months	Medium
IV-10	Update the ITS disaster recovery plan and begin routinely reviewing and testing disaster-recovery plans and documenting results.	131	High	0-6 Months	High
IV-11	Perform a server consolidation study and implement study recommendations.	132	High	0-6 Months	\$223,000 to \$267,600 annually
IV-12	Initiate a formal procedure requiring an annual review of the requirements for each employee to have an assigned vehicle based on his or her current job assignment.	150	Medium	0-6 Months	Medium
IV-13	Develop a formal procedure that details a requirement for the performance of a regularly scheduled annual physical inventory of the vehicles that are leased from ARI.	150	Medium	0-6 Months	Low
IV-14	Develop an exception report that would clearly identify excessive fuel usage by specific vehicles or employees on a weekly or monthly basis.	151	Medium	0-6 Months	Low
IV-15	Perform an internal audit of the ARI contract and the resultant invoices using the AWWSC Internal Auditing group.	151	Medium	6-12 Months	Medium
IV-16	Perform a cost/benefit analysis to determine whether the continued use of the two PAWC mechanics in the Pittsburgh District is cost effective.	151	Low	6-12 Months	Medium
IV-17	Perform a reassessment of the PAWC policy relating to the use of employer-provided vehicles that are used for personal purposes in order to be in compliance with IRS regulations.	151	Medium	0-6 Months	Medium
IV-18	Develop a computerized tracking system that is capable of monitoring the completion of the annual state-vehicle inspections for the individual vehicles in compliance with the established schedule.	152	Medium	0-6 Months	Low
IV-19	Establish a single point of responsibility for the facilities and properties management function at PAWC.	157	High	0-6 Months	Medium
IV-20	Develop a set of formal policies and procedures to guide the performance of the facilities and properties management function at PAWC and American Water	158	High	6-12 Months	Medium



	Description	Page	Priority	Implementation	
				Initiation Time Frame	Benefits
IV-21	Initiate a software identification, selection, and evaluation process for a new integrated procurement/materials management application.	174	High	0-6 Months	High
IV-22	Evaluate in detail the impacts of not mandating the use of national contracts with preferred vendors by the state-operating companies, especially in terms of the financial impacts, and determine whether mandating this practice would be beneficial to the operating companies.	175	Medium	6-12 Months	Medium
IV-23	Initiate a study to determine how best to present the operational and performance data on a state company basis and to evaluate the potential benefits of such reporting changes.	175	Medium	6-12 Months	Medium
IV-24	Perform an internal audit of the inventory data that is produced and used by PAWC to determine the accuracy thereof.	193	High	0-6 Months	High
IV-25	Initiate an ERP materials management module evaluation and selection process with the intention of identifying a fully integrated ERP application that would serve the needs of the PAWC materials management function.	193	High	0-6 Months	\$400,000 one-time \$100,000 annually
IV-26	Establish a central point of management and responsibility for the materials management function at both AWWSC and PAWC.	194	High	0-6 Months	High
IV-27	Develop a comprehensive and detailed materials management procedures manual that is specific to PAWC.	194	Medium	0-6 Months	Medium
IV-28	Establish a formalized training program at PAWC for the personnel who have been designated as being responsible for the materials management function at the various storerooms.	195	Medium	0-6 Months	Medium
IV-29	Adopt and expeditiously implement at PAWC the standardized part-number format that is being developed by the Part Number Standardization Committee.	195	Medium	0-6 Months	Medium
IV-30	Design and implement a standardized inventory-grid location system at all PAWC storerooms.	196	Medium	6-12 Months	Low
IV-31	Develop and implement a standardized procedure for performing cycle counting that is to be used at all storerooms.	196	Medium	0-6 Months	Medium
IV-32	Develop an inventory management plan that addresses how to identify and handle obsolete and excess material.	196	Medium	6-12 Months	Low
IV-33	Incorporate maintenance items into the current materials management application to gain better inventory control over these items.	197	Medium	6-12 Months	Medium



	Description	Page	Priority	Implementation	
				Initiation Time Frame	Benefits
IV-34	Establish a system of a few centralized storerooms that are to be used for strategic parts storage.	197	Medium	6-12 Months	Low
IV-35	Implement a program at PAWC to standardize the inventory maintenance and control procedures across the PAWC storerooms.	197	Medium	6-12 Months	Medium
IV-36	Install computer terminals in secure locations at all of the PAWC storerooms.	198	Medium	6-12 Months	Medium
IV-37	Develop and implement a procedural modification that stipulates that material is decremented from the inventory at the time of issue from the storeroom, not at the time that it is used in the field.	198	Medium	6-12 Months	Medium
IV-38	Develop a formal implementation plan for changing the focus of the ERM process to include SEC/SOX compliance.	211	Medium	0-6 Months	Low
IV-39	Establish a formal mechanism for developing a pre-qualified list of external legal firms by periodically reviewing proposals from potential candidates.	220	Low	6-12 Months	Low
IV-40	Perform a formal cost/benefit analysis regarding standardization of legal management software throughout the American Water system.	220	Medium	6-12 Months	Medium

Chapter V – Water Operations

	Description	Page	Priority	Implementation	
				Initiation Time Frame	Benefits
V-1	Aggressively pursue the identification and implementation of technology-based best practices among the water districts.	243	High	12+ months	High
V-2	Develop a business process for addressing aggressive identification of the most beneficial main segments for replacement based on an expectation of potential leak impact.	244	High	12+ months	High
V-3	Implement a computerized maintenance management system in conjunction with the proactive production equipment maintenance program.	249	High	12+ months	High
V-4	Continue to develop a risk-assessment-based approach for identifying main replacement projects.	254	High	12+ months	High
V-5	Continue to periodically perform CPS studies.	254	Medium	12+ months	Low

Phase II – Pre-Identified Issues Review

Chapter VI – Corporate Governance

	Description	Page	Priority	Implementation	
				Initiation Time Frame	Benefits
VI-1	Require contractors, vendors, and others doing business with American Water to conduct themselves ethically when dealing with American Water entities.	267	Low	0-6 Months	Medium
VI-2	Expand the American Water Board in anticipation of going public and review Board compensation as soon as possible.	267	Medium	6-12 Months	High
VI-3	Implement a process to periodically perform cost comparisons for external audit services.	268	Medium	0-6 Months	Medium
VI-4	Modify the Internal Audit Department reporting structure so that it no longer administratively reports to the American Water CFO.	268	Medium	0-6 Months	Medium

Chapter VII – Corporate Culture, Management Structure, and Staffing Levels

	Description	Page	Priority	Implementation	
				Initiation Time Frame	Benefits
VII-1	Expedite efforts to define and support a high-performing organizational culture.	281	Medium	6-12 Months	High
VII-2	Implement an employee survey process with appropriate feedback and action-planning components.	282	High	0-6 Months	High
VII-3	Implement a formal management development process.	282	Medium	6-12 Months	High
VII-4	Fill open Organization Development positions in American Water and assess the need for additional change management resources for PAWC.	282	High	0-6 Months	High
VII-5	Implement workforce management processes at PAWC.	282	High	0-6 Months	High



Chapter VIII – Affiliate Interests

	Description	Page	Priority	Implementation	
				Initiation Time Frame	Benefits
VIII-1	Develop formal, comprehensive documentation for affiliate relationships and cost allocations, and assign the responsibility for affiliate transactions to the appropriate manager.	312	High	0-6 Months	Medium
VIII-2	Perform a detailed analysis to verify that the use of the number of customers for allocating AWWSC costs among regulated utilities reasonably approximates the use of cost-causative factors; subsequently make modifications, as appropriate.	312	Medium	6-12 Months	Medium
VIII-3	Regularly evaluate the cost of services provided to PAWC by its affiliates so as to verify that PAWC ratepayers are not being harmed by charging these services at cost rather than market.	313	Medium	6-12 Months	Medium
VIII-4	Update the AWWSC/PAWC affiliate agreement, as necessary, and submit it to the PaPUC for review and approval.	313	Medium	12+ Months	Medium
VIII-5	Provide ongoing training updates to AWWSC employees on proper use of billing numbers for charging affiliates when reporting time.	314	Low	12+ Months	Low
VIII-6	Regularly conduct internal audits of affiliate transactions and associated cost allocations.	314	High	0-6 Months	Medium

Chapter IX – Diversity and EEO

	Description	Page	Priority	Implementation	
				Initiation Time Frame	Benefits
IX-1	Update the diversity action plan, provide resources, and implement the plan in a timely manner and give consideration to a Pennsylvania-specific initiative.	339	High	0-6 Months	High
IX-2	Complete efforts to assure data integrity in the JD Edwards human resources information system.	339	High	0-6 Months	Medium
IX-3	Develop and implement a standard data-verification process for EEO-1 reporting.	340	High	0-6 Months	High
IX-4	Require the AWWSC Human Resources Vice President to review and approve EEO-1 reports prior to submission.	340	High	0-6 Months	Medium
IX-5	Define, document, and implement more aggressive hiring plans for women and minorities.	340	High	0-6 Months	Medium

	Description	Page	Priority	Implementation	
				Initiation Time Frame	Benefits
IX -6	Formalize the supplier diversity program and explore the use of spend targets in the Supply Chain performance objectives.	341	Medium	6-12 Months	Medium
IX-7	Submit comprehensive diversity reports to the PaPUC annually.	341	High	6-12 Months	Low

Chapter X – Customer Service

	Description	Page	Priority	Implementation	
				Initiation Time Frame	Benefits
X-1	Invest in new customer interfacing technology, including IVR, electronic billing, and web self-service capabilities.	386	Medium	6-12 Months	Medium
X-2	Analyze employee turnover at the Pensacola Call Center and develop strategies to reduce turnover.	386	High	0-6 Months	High
X-3	Strengthen recruitment, selection, and training practices to improve the quality of new CSR hires.	386	Medium	0-6 Months	Medium
X-4	Develop a Pennsylvania-specific customer service scorecard and regularly report associated metrics to the PAWC President.	387	High	0-6 Months	High
X-5	Perform an analysis of the increase in complaint trends that PAWC is currently experiencing.	387	Medium	0-6 Months	Medium
X-6	Perform an analysis of the growth in PAWC disputes.	387	Medium	0-6 Months	Medium
X-7	Initiate actions to lower the number of over estimates in meter reading.	387	High	6-12 Months	\$300,000 to \$400,000 annually
X-8	Complete the upgrade project for Advantex.	388	High	12+	High



Chapter XI – Operational Performance

	Description	Page	Priority	Implementation	
				Initiation Time Frame	Benefits
XI-1	Develop a comprehensive damage prevention program.	392	Medium	12+ months	\$100,000 annually
XI-2	Improve business-continuity planning.	397	Medium	12+ months	Medium
XI-3	Perform a review and incorporate better technologies for preparing, distributing, and updating the emergency and the operations and maintenance manuals including the intranet site.	398	Medium	12+ months	Low
XI-4	Continue to strengthen the unaccounted-for-water program.	410	High	12+ months	High
XI-5	Incorporate the methodologies in the currently evolving UFW spreadsheets into a more appropriate technology, specifically a backend database with a client server or web interface.	410	High	12+ months	High
XI-6	Refine the reporting of unaccounted-for water to the PaPUC.	410	Medium	6-12 months	Low
XI-7	Investigate the reasons for the increase in overtime that has occurred in the Production Department.	418	Medium	6-12 months	\$75,000 annually
XI-8	Implement standard systems for monitoring and reporting key statistical information in network operations.	419	High	12+ months	High

Phase III – Focused Area Analysis

Chapter XII – Phase III Water Operations – Distribution Business Systems

	Description	Page	Priority	Implementation	
				Initiation Time Frame	Benefits
XII-1	Structure the design of business applications for the distribution operations function as shown in Exhibit XII-5.	434	High	12+ Months	High
XII-2	Develop the leak tracking and reporting database as a part of a larger, long-term effort to integrate with other supporting performance reporting business processes such as NRW, permits, pavement tracking, and hit facilities.	436	High	6-12 Months	High

	Description	Page	Priority	Implementation	
				Initiation Time Frame	Benefits
XII-3	Adopt the multi-organizational reporting structure (upon which CMMS is being implemented) across both the workforce management business process and supporting performance business processes.	436	High	0-6 Months	High
XII-4	Engage AWWSC ITS to assist in the development of the supporting performance reporting process systems identified in Exhibit XII-5.	436	High	0-6 Months	High
XII-5	Address the deficiencies in the current plans regarding the incorporation of leak tracking and reporting into the design of CMMS.	437	High	0-6 Months	High
XII-6	Consider integration of leak tracking and reporting with the eventual GIS system versus integration with CMMS.	437	Medium	6-12 Months	Medium
XII-7	Ensure that the leak history is migrated into the eventual leak tracking and reporting database from all existing databases with good data.	437	High	0-6 Months	High
XII-8	Electronically connect leak and other records to the main prioritization model.	438	Medium	12+ Months	Medium
XII-9	Allocate infrastructure improvement budgets on a state-wide basis not just district by district.	438	High	12+ Months	High
XII-10	Consider the eventual implementation of the parts and inventory component of CMMS.	438	Medium	12+ Months	Medium
XII-11	Recognize that a more robust distribution workforce management application may eventually be required to support future business processes.	439	Low	12+ Months	Low

Chapter XIII – Phase III Human Resources

	Description	Page	Priority	Implementation	
				Initiation Time Frame	Benefits
XIII-1	Provide resources and perform timely implementation of the six deliverables developed as part of this Phase III project.	459	High	0-6 Months	High



II. Executive Management, External Relations, and Human Resources

This chapter will review executive management functions of Pennsylvania-American Water Company (PAWC), which include organizational structure and planning, management communications and control, administrative procedures and control, strategic planning and external relations, and human resources.

A. Executive Management

Background & Perspective

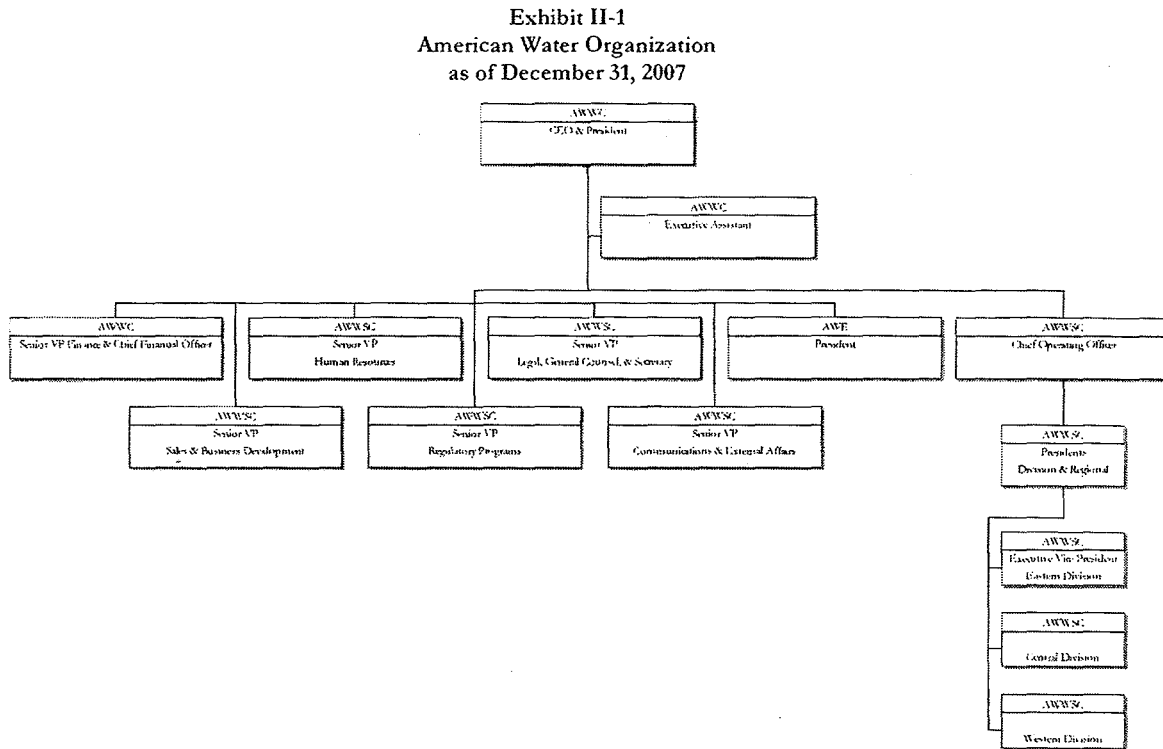
Organization Structure and Planning

PAWC is a wholly owned subsidiary company of American Water Works Company, Inc. (American Water). PAWC is a regulated public utility that is organized and existing under the laws of the Commonwealth of Pennsylvania. It serves over 640,000 customers throughout 35 counties in Pennsylvania. PAWC owns and operates distribution systems for the purpose of furnishing potable water for residential, commercial, industrial, and government users in its service territory. PAWC also owns, operates, and maintains collection, pumping, and treatment systems for furnishing wastewater service to residential, commercial, industrial, and government users in its service territory.

American Water is a corporation that is located in New Jersey but organized and existing under the laws of the State of Delaware. American Water owns 18 regulated operating subsidiaries (including PAWC) in 18 states. American Water is currently wholly owned by RWE Aktiengesellschaft (RWE), a foreign corporation that is organized and existing under the laws of the Federal Republic of Germany. As of 2007, RWE was planning on divesting all or part of its ownership in American Water through a public common-stock offering (to be listed on the New York Stock Exchange), although the timing of that offering has not been determined.



The American Water organization as of December 31, 2007 is shown in *Exhibit II-1*.



Acronyms at top of each box represent the employee's company affiliation. Although most employees are AWWSC employees, some are actually American Water Works Company (AWWC) employees or American Water Enterprises (AWE) employees.
Source: Information Response 257, Page 4. Information response 779

Reporting to the Chief Executive Officer (CEO) and President are Senior Vice Presidents (SVPs) for Finance (also Chief Financial Officer), Sales and Business Development, Regulatory Programs, Human Resources, Communications & External Affairs, and Legal, General Counsel & Secretary. Also reporting to the CEO is the Chief Operating Officer (COO), who is responsible for division and regional companies that are headed by regional and company presidents (including PAWC in the Eastern Division), as well as Vice Presidents (VPs) for Customer Services, Operational Services, and Process Performance. The AWE President also reports to the CEO.

The last major organizational restructuring (completed) took place in November 2003, after RWE acquired American Water. That reorganization resulted in the consolidation of seven regions into four, with PAWC as one of six regulated subsidiaries that became part of the Southeast Region. Functional groups (e.g., service delivery, finance, human resources, and external affairs) were placed under regional leadership, with staff deployed into states as needed. The organization review that resulted in these

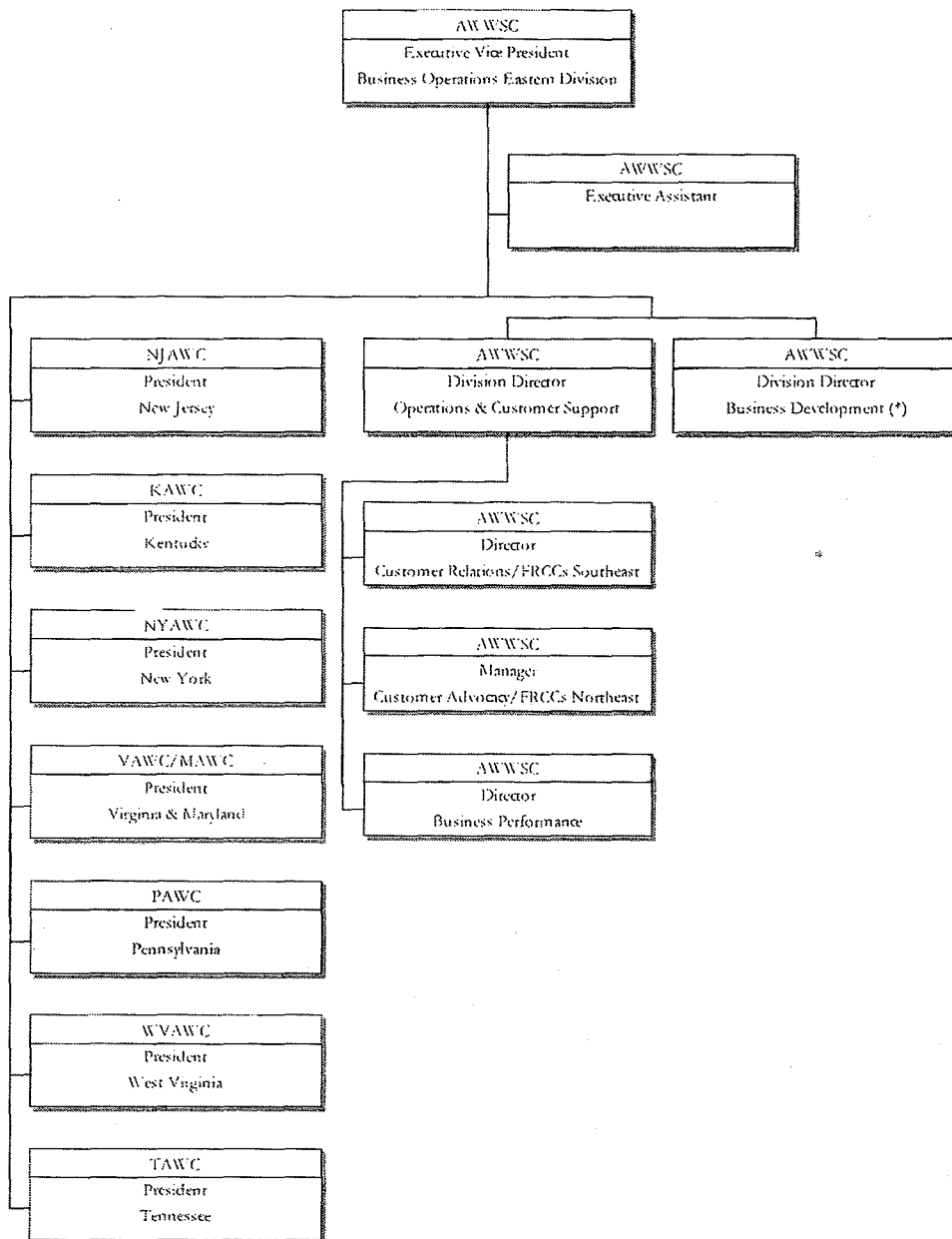
changes was part of an overall Vision and Strategy process that was carried out to develop a business model for enhancing customer service, accelerating business growth, and increasing efficiencies.

Most employees at the corporate level are employees of the American Water Works Service Company (AWWSC), with the President/Chief Executive Officer and Senior Vice President/Chief Financial Officer (and their executive assistants) being the only employees of the parent company.

In 2007 American Water began moving away from a regional structure to align key support functions on a national basis. The aim of this migration is to achieve economies of scale and best practices while focusing operational and state-specific functions on a state level. In late 2007 the Northeast and Southeast regions were combined into an Eastern Division (includes Pennsylvania-American Water Company), with the Central and Western regions combining in 2008 into a Western Division (also with state presidents). *Exhibit II-2* shows the first phase of this reorganization (Central and Western regions will realign after the Eastern Division is formed).



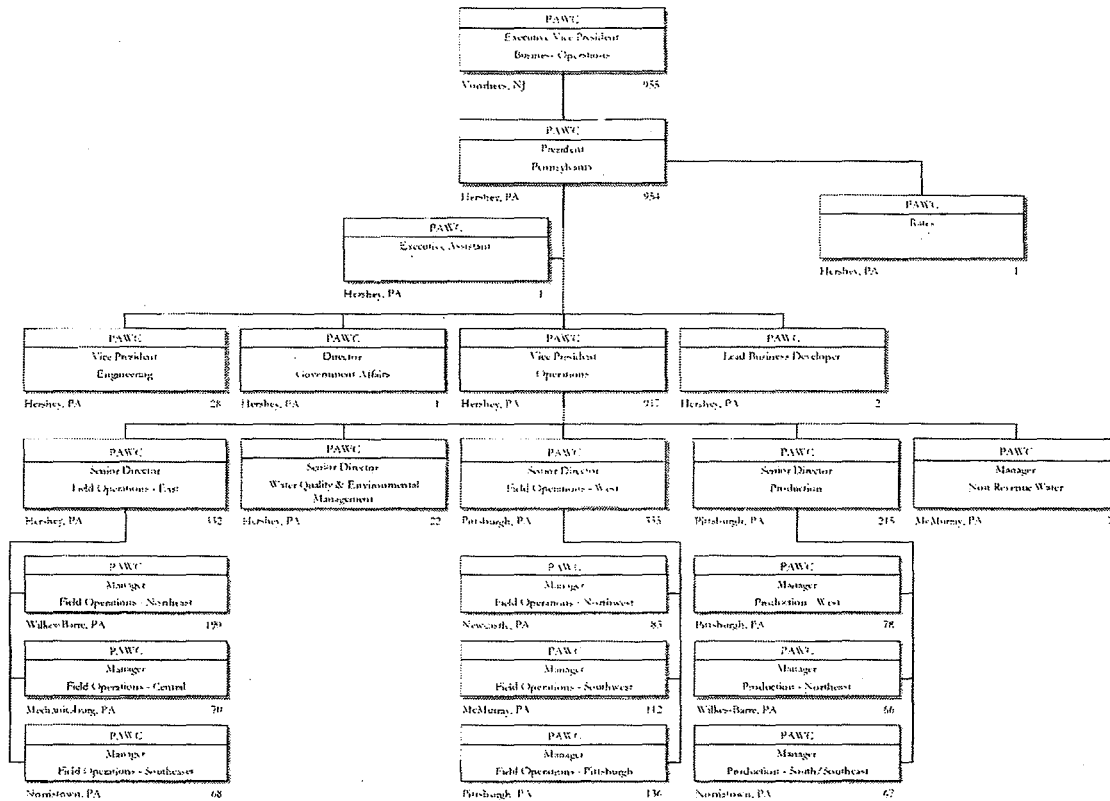
Exhibit II-2
American Water Eastern Division Reorganization
as of December 31, 2007



Source: Information Response 1, Page 4 and 257 Addendum. Information Response 779(2)

Exhibit II-3 shows the Pennsylvania state organization, with production, operations, engineering, and other state-specific functions reporting directly to the state president. Meanwhile, support functions (e.g., law, finance, human resources) are provided from the corporate level to all divisions/states.

Exhibit II-3
Pennsylvania-American Water Company Organization
as of December 31, 2007



* Dual reporting to Finance and dotted line reporting to the PAWC President
Excludes 27 PAWC employees reporting to AWWSC management
Source: Information Response 257 and 779

The above organizational changes in *Exhibit II-2* and *Exhibit II-3* have come about through informal management discussions, not a formal process where minutes were kept of meetings. The process was driven by the CEO, based in large part on what he heard from employees, customers, and other stakeholders. No organizational measurement or assessment tools have been used. The PAWC President had no input to higher-level organization changes, but she is tasked with making necessary changes to the PAWC organization.



No written department nor division descriptions, which include goals and objectives for each department, exist. In early 2008 PAWC began a process of developing goals and objectives.

Management and Administrative Communications and Controls

PAWC uses a number of avenues to communicate with its employees, including:

- ◆ *Splash* – a regional employee newsletter on current events as well as important activities and employee accomplishments. *Splash* is distributed to all employees via hard copy and is available on the intranet.
- ◆ *Talking Splash Points* – a bi-weekly e-mail communiqué to all employees on company activities and initiatives. The purpose is to develop two-way dialogue between employees and management.
- ◆ *Change Partner Network (CPN)* – a group of employees representing all levels at American Water that facilitates discussion with others (through meetings) on various issues and questions. Network members participate in meetings via conference calls (bi-monthly) (including representation by PAWC) and then have follow-up meetings with their colleagues.
- ◆ *In The News* – a daily communiqué that is sent to management and supervisors highlighting news articles that pertain to PAWC and other pertinent utility-industry news.
- ◆ *News You Need To Know* – a daily e-mail broadcast of recent news, announcements, policy revisions, and other current items of interest. Employees can gain additional information on any topic through PAWC's intranet.
- ◆ *Internal Announcements* – American Water-wide e-mail communications from senior management about important PAWC announcements.

Also, individual managers and supervisors conduct "tool box" talks with their direct reports.

PAWC uses a number of management reports, including:

- ◆ *Environmental Management and Compliance* – a monthly regional summary report to management on important environmental events and key statistics.
- ◆ *Network Reports* – PAWC superintendents provide key operating information to management (monthly).
- ◆ *External Affairs* – two monthly reports on activities in each state and summaries of issues that have the potential to negatively impact PAWC's business.
- ◆ *Business Development Reports* – include pipeline report (transactions under development) and Critical Tasks memo (to closing of advanced transactions under agreement/offer outstanding/offer pending in ninety days).
- ◆ *Finance Reporting and Business Performance Reporting* (monthly) packages.

- ◆ *Capital Investment Management (CIM) Program Progress Report* (monthly) that tracks capital expenditures.
- ◆ *Reforecast Reports* (quarterly) on the Strategic Capital Expenditure Plan.

American Water creates and updates its policies via a process called the Policies, Strategies, and Practices process. A policy panel was established in August 2006 to guide and support this process. Key Governance templates were developed for American Water to define policies, practices, and strategies. American Water defines policies as pertaining to essential mandates that are basically non-negotiable, with few, if any, exceptions. Strategies describe what American Water strives to be or do and provide direction or guidance to management decisions that take into account appropriate service levels, costs and operating efficiencies, and business risks. Practices provide the details and steps for how the business should operate. Practices include guidelines, standards, procedures, processes/workflows, and tools (models, checklists, references, etc.). All policies are approved by the American Water Board, the AWWSC Board, and/or the Business Center Functional Executives (CFO, COO, etc.). Strategies and Practices are approved by Functional Managers (Business Centers and Regions). The intranet is used as the primary means of distributing policies, strategies, and practices throughout the organization. This effort is coordinated by the Policy Panel, which is made up of 17 managers representing all areas of the American Water system.

Strategic Planning

American Water's corporate strategy, as described in its recent S-1 filing with the Securities & Exchange Commission (SEC), is to consistently provide customers with safe, high-quality drinking water as well as reliable water and wastewater services. American Water intends to implement this goal by:

- ◆ Prudently investing in regulated water and wastewater infrastructure projects
- ◆ Earning an appropriate rate of return on investments from state public utility commissions
- ◆ Growing regulated businesses through acquisitions
- ◆ Pursuing public and private partnerships, including operations and maintenance (O&M), military contracts and services, and other non-regulated businesses that are complementary to its regulated businesses

The strategic-planning process for PAWC is initiated and directed by American Water, its parent company. Overall, American Water develops a strategy that then feeds down into business-unit strategies. These strategies, in turn, are used to develop business plans. At the American Water level, a process calendar is developed that includes process deliverables and timeframes for process completion. PAWC supports this effort by identifying key assumptions and assigning responsibilities for task completion. These initiatives are then reflected in supporting plans that are developed at the Southeast Regional level. Quarterly financial planning and analysis meetings are held to update expectations (e.g., deadlines and approaches), key assumptions (e.g., capital expenditures), and future planning activities (e.g., tasks, owners, and due dates) for the business plans.



For 2007, American Water targets were established in the areas of:

- ◆ *Finance* – meeting business-plan financial commitments, processing rate cases effectively, and securing regulatory approval for transfer of ownership (public offering).
- ◆ *Customer* – enhancing customer satisfaction, delivering reliable and high-quality service, further developing business growth, and enhancing brand equity through an integrated and coordinated company-wide communications approach.
- ◆ *Process* – enhancing operational performance by achieving Sarbanes-Oxley (SOX) compliance (enhanced internal controls and responsibility) and delivering on the capital program; executing a company-wide diversity plan.
- ◆ *Employee* – enhancing employee strength and capabilities as well as employee engagement and satisfaction.

Broad goals in all four of the above areas are assigned to senior level managers in the organization and these goals are then cascaded down through the organization (employee specific via a balanced scorecard).

There have been no strategic-planning studies performed in the past five years.

Regional business performance is tracked via monthly business-performance reporting packages (discussed by senior management through meetings and conference calls).

Corporate goals and targets have been defined for American Water, the regional levels, and PAWC in the areas of finance, customer service, process (operating performance and diversity), and employee (skills, capability, and employee satisfaction). There are no associated business plans that directly tie in to these high-level goals and targets.

In February 2006, American Water conducted a partial internal benchmarking study that included the Customer Service Center (CSC), Information Technologies (IT), Shared Services Center (SSC) and Finance, Water Quality, Human Resources (HR), and Supply Chain organizations. This study focused on costs, and not service levels, although it identified some key performance indicators (KPIs) for each functional area as well as a discussion of supporting indicators (drill down) and qualitative drivers. Not all functions (e.g., operations) were included in this study. Subsequently (later in 2006), an outside group was engaged to perform a more comprehensive benchmarking study that would include the use of cost data to develop productivity and effectiveness data. This effort is on hiatus until after the initial public offering is completed. American Water has indicated it intends to complete this more comprehensive study.

The Southeast Region (PAWC contributes) has a number of key performance indicators (KPIs) that are monitored on a weekly and monthly basis. Areas include financial (budget variance reports), customer-opinion surveys and actions taken in response to each survey, inventory action plans and turns data, and numerous performance indicators for network, production, and field-service personnel. These

performance measures are used by supervisors to manage specific areas of their responsibility and are not tied back to any corporate-wide strategic plan.

There are no major corporate initiatives underway except for the state-focused organization realignment (discussed earlier) and the Sarbanes-Oxley (SOX) compliance initiative (discussed in *Chapter X – Corporate Governance*).

Findings & Conclusions

Finding II-1 In general the American Water/PAWC organization adequately supports current ratepayer and corporate objectives.

American Water, PAWC, and regional and supporting organizations are undergoing significant organizational changes. The basis for these changes, while largely informally developed, is sound and practical. A corporate focus on centralizing core services, focusing more control at the state level, and promoting efficiencies, commonalities, and best practices throughout the American Water system is appropriate (especially given the numerous and dispersed companies in the American Water system).

A review of the existing organization (American Water executive team, Southeast Region, and PAWC) down through the Manager/Director level shows that spans of control are appropriate, and Schumaker & Company did not identify any excess layering of management. Like functions are grouped together (within American Water, regional, and PAWC organizational units) and appropriate matrix relationships exist between like functions at different levels of the organization (e.g., financial functions up and down the organization).

Specific instances where Schumaker & Company recommends organizational changes are included in *Chapter IV – Support Services* and *Chapter IX – Diversity & EEO*.

Finding II-2 Organizational planning and development at American Water/PAWC is largely informal and could be improved.

There are no documented processes, criteria, or procedures for evaluating the efficiency and effectiveness of the organization. Organizational changes are not part of a strategic-planning process and, at the regional/company level, are justified through the budgeting process (as part of the process of reviewing additions, changes, and deletions impacting labor costs), as discussed further in *Chapter III – Financial Management*. There is no documentation on the rationale or process for past changes to guide future reviews (e.g., the conditions that prompted an organizational change). There are no requirements to periodically review the organization, nor are there any criteria that would define triggers to evaluating the organization or specific organizational units.



Finding II-3 Management communications and control are adequate.

American Water uses a number of written and intranet vehicles to communicate with its employees on a weekly (e.g., News You Need to Know), bi-weekly (e.g., Splash Points), and monthly (Splash) basis. Topics go beyond news of general interest and include ownership-transition updates; posting of new policies, organizational changes, and key managerial positions; information and training on SOX initiatives; customer satisfaction, diversity, information technologies, Code of Ethics, and the Ethics Hotline; and news on other important process initiatives (e.g., Supply Chain), among other items. Splash, PAWC's monthly newsletter, is a professionally prepared publication that covers a wide range of topics, including personal messages from the Chief Executive Officer, and is well laid out (short, to-the-point articles with appealing pictures).

The Change Partner Network is a good means of promulgating information via face-to-face meetings between management and employees. The purpose of this American Water program is to employ a cross-section of employees to share information and create an ongoing dialogue about American Water's news, business changes, and operations. Although each meeting (held monthly and integrated into the weekly Splash Points/Tailhook meetings) has a designated speaker and topics, the interaction is two-way with the participants. The intent of such interaction is the identification of topics of interest and concern to employees (hot topics) and the provision of feedback on what is or is not working. Employees can participate via conference calls, and liaisons are identified to assist with follow-up questions and action items and to arrange for subject-matter experts to participate as needed, among other duties. Listed topics include important and changing customer, employee, and operations topics such as training, SOX compliance, customer service and call centers, and best operating practices, among others. The Southeast Region (which includes PAWC) has approximately 60 members of CPN, representing a broad range of employees across the Southeast and PAWC organizations. PAWC-specific issues are addressed mainly through Splash Points/Tailhook meetings.

Finding II-4 Administrative procedures and controls are appropriate.

Around the beginning of 2006, American Water and the subsidiary companies embarked on a review of policies and procedures. This process involves the Senior Management Team identifying and documenting the need for a new policy or a revision to existing policies, with sponsoring senior managers, affected functional areas, and other stakeholders developing and reviewing drafts of policies and implementation plans. A Policy Panel coordinates this effort and approves the policy for forwarding to the appropriate approval authority (American Water Board, AWWSC Board, or Business Service Executive). The appropriate functional area manager is then responsible for communicating and implementing the policy or procedure and for monitoring and reporting on its effectiveness or any problems. Guidelines in the form of templates and training presentations have been established to guide the form, substance, and consistency of all policies and practices. Policy implementation plans and Intranet posting checklists track development and implementation of each approved policy. Procedures are publicized to employees via weekly "What's New," more important procedures are further highlighted in other employee publications (e.g., Splash Points), and the library of all procedures

is maintained and made available on PAWC's intranet. The status of policy review and implementation is addressed through the Policy Panel.

Functional managers are responsible for policy and procedure maintenance and the Policy Panel is charged with coordinating this effort. Policies are required to be reviewed every three years or when required by any significant operational or organizational changes. All updated policies are listed on the American Water intranet with the effective date of their last revision.

Finding II-5 American Water and PAWC lack a formal, systematic strategic-planning process.

Although American Water has laid out strategic goals and targets in various documents (e.g., S-1 filings, employee communications, and business plan), there is no strategic plan laying out the strategic direction of the company that is tied to overall goals and performance indicators. Likewise, there are no directly supporting subsidiary plans that further break down goals and performance indicators.

Although the 2007–2011 business plan and supporting regional business plans contain some elements of non-financial aspects, these documents are largely financial-planning tools. PAWC does have a number of performance indicators (key performance indicators) and plans to improve non-financial areas (e.g., Human Resources), but these are not directly tied to corporate strategies. As mentioned earlier, American Water has initiated an effort to develop performance indicators (including benchmarks); however, this effort has not been completed and needs to be incorporated into future strategic planning efforts.

Recommendations

Recommendation II-1 Develop a systematic organizational-planning and development process. (Refer to Finding II-2.)

Periodically (at least every five years), American Water should examine the organization to ensure that it is still meeting all corporate goals and objectives (customer service, efficiencies, etc.). This process can be incorporated into the annual strategic-planning process. Set out criteria for review such as spans of control, grouping of like functions, management layering, impact of management development and training, performance criteria, level of support required from other organizational units, and lines of reporting and communication (this is not meant to be an inclusive list). If these reviews come through management meetings/discussions and committee work, results should be documented. Also, the company must define conditions or situations that should trigger an organization review (e.g., major change of a business process, application of a new technology, difficulty responding to a major or systemic problem or issue). It must also assign responsibility for maintaining updated organization charts.



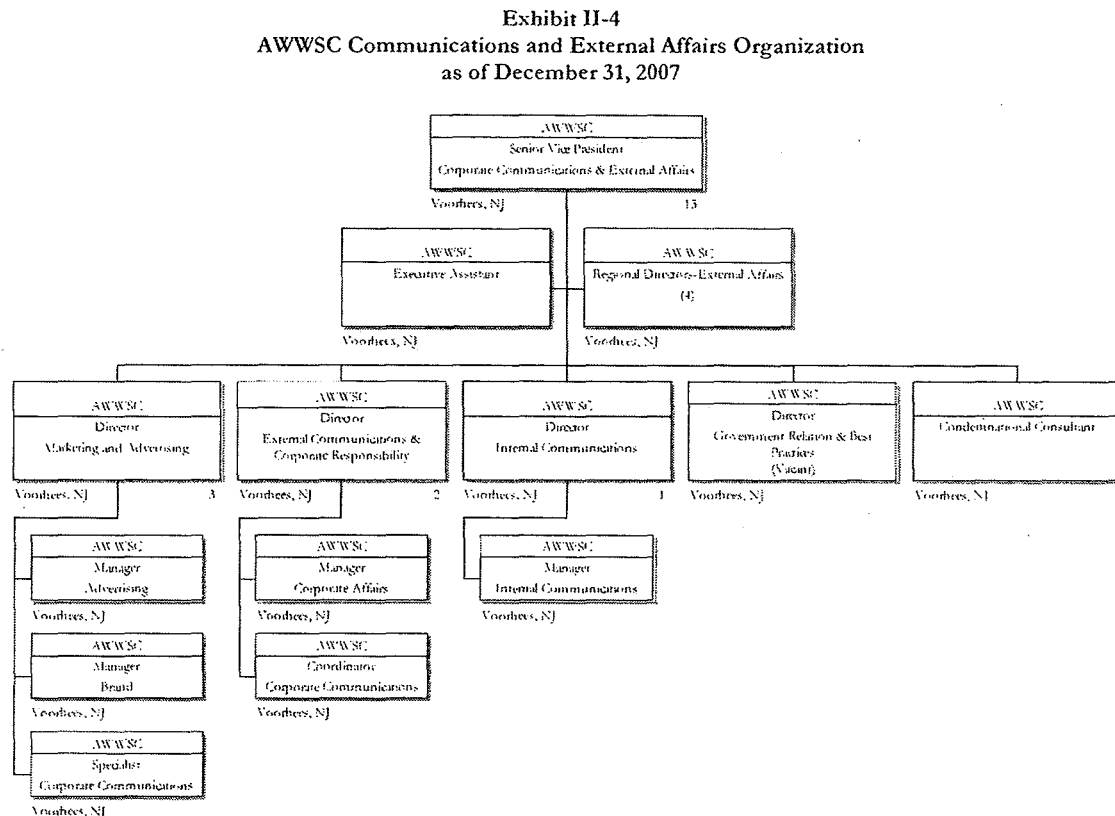
Recommendation II-2 Develop a formal and integrated strategic-planning process. (Refer to Finding II-5.)

American Water should develop a written strategic plan that embodies American Water's four main goals as described in its S-1 filing and other documents. The company must tie each strategic goal to sub-tending supporting goals and set performance targets to measure these goals. It will require subsidiary companies to develop supporting plans that directly tie back to the Corporate Strategic Plan. American Water should also establish calendars and processes (similar to business-planning process) and establish a coordinating group (e.g., Strategic Planning group) or expand the duties of the current Planning and Controls group to coordinate and assist in the process.

B. External Relations and Corporate Communications

Background & Perspective

The American Water External Affairs organization, which is part of AWWSC, is shown in *Exhibit II-4*.



Source: Information Response 444

The Corporate Communications and External Affairs group is lead by a Senior Vice President who reports directly to the American Water Chief Executive Officer and President and is responsible for developing and implementing an integrated strategic-communications program for American Water and its subsidiary companies. This duty includes corporate communication, media relations, community relations, internal communications, and corporate social responsibility. The Senior Vice President Corporate Communications and External Affairs is also responsible for leading the government-affairs function, including direct or oversight responsibility for developing and maintaining relationships with government bodies, commissions, agencies, and legislatures at all levels. This obligation includes



participating in developing and supporting rate case strategy, developing and delivering to government officials relevant information, materials, and presentations, and developing external relationships to shape the legislative and regulatory environment.

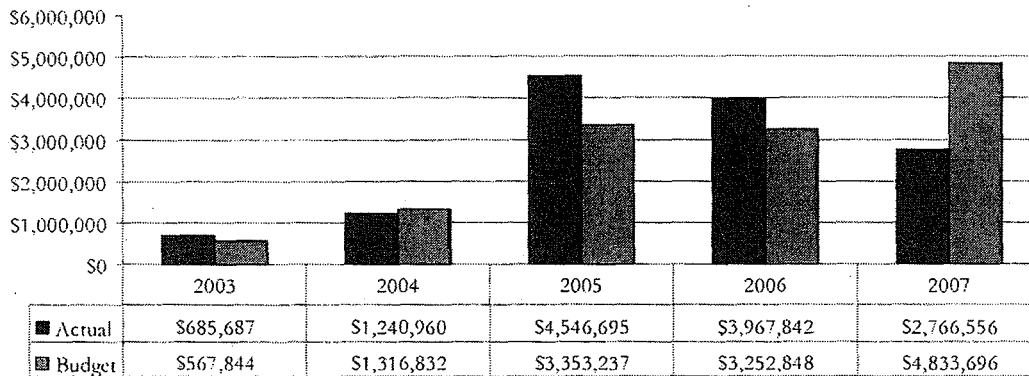
Reporting to the Senior Vice President are Directors for Internal Communications, Marketing and Advertising, and External Communication and Corporate Responsibility. The Director of Internal Communications is responsible for creating and maintaining a comprehensive, integrated, and proactive internal communication program, which ensures that employees are informed about American Water's strategy, business goals, and key initiatives. The Director of Communications and Corporate Responsibility is responsible for leading and managing American Water's external-affairs strategy including media relations, government relations, community relations, grassroots strategies, and key relationship development and management. The Director of Advertising and Marketing is responsible for marketing, advertising, and all communications activities to support key business-development activities as well as overseeing the American Water rebranding efforts (marketing and advertising programs to change, for the better, the way important publics feel about American Water when they hear or think about its name). A Director of Government Relations and Best Practices (this position has recently been created and is currently vacant) will be responsible for government-affairs-related activities on the federal and state levels. This responsibility includes direct contact with federal lawmakers and regulators concerning water and wastewater issues (including directing the efforts of contract lobbyists in Washington). It also entails working with the states to develop and implement local and state government-affairs programs including outreach programs. This position will have a dotted-line reporting relationship with the state presidents. In addition, four Regional Directors of External Affairs support the American Water effort and provide a more specific regional and state focus on this function.

American Water has recently rolled out several key communications strategies and programs as follows:

- ◆ *Rate Case Communications Strategy* – a methodology for outlining and implementing communications to regulatory bodies and key publics in support of rate-case filings.
- ◆ *Capital Investment Communications Strategy* – means of communicating to states, local communities, and other key constituencies the need and value of capital-investment projects.
- ◆ *Bill Insert Strategy* – projected number of inserts by state and associated costs.
- ◆ *Issues Management Protocol* – a means of identifying and managing issues affecting American Water and of establishing roles and responsibilities throughout the organization.
- ◆ *Collateral Overview Strategy* – a means of developing packages of communications material to be used throughout American Water.

Expenditures for AWWSC external-relations activities for the past five years (2003 to 2007) are shown in *Exhibit II-5*.

Exhibit II-5
Summary of Expenditures for AWWSC External-Relations Activities
2003 to 2007



2007 actual expenditures reflect only nine months of data.

Source: Information Response 445. Figures include payroll and overhead.

The budget increased significantly from 2004 to 2005 mainly because of increases in expenditures for payroll costs and advertising. The budget increase from 2006 to 2007 reflects marketing costs from Business Development, which was transferred under External Relations. AWWSC External Relations staffing levels have increased significantly, from minimal levels up to its 2007 strength of 14, including Regional Directors.

In addition to AWWSC costs, expenditures specific to PAWC (direct expenses, excluding payroll and overhead costs) have averaged slightly over \$500,000 per year over the past five years, and these sums have been fairly consistent, although 2007 did see a jump to \$640,000. The great majority of these funds were devoted to community-relations activities such as donations to charitable organizations, sponsorship of local events and chamber of commerce activities (\$200,000 budgeted in 2007), and various printing and mailing services related to booklets, newsletters, flyers, print advertising, and the like (\$420,200 budgeted in 2007).

PAWC must answer to a number of governmental and regulatory agencies including The Pennsylvania Public Utility Commission, the Office of Consumer Advocate, the Office of Small Business Advocate, the Department of Environmental Protection, the Department of State, the Ethics Commission, the Independent Regulatory Review Commission, the Pennsylvania Department of Transportation, the Department of Revenue, and the Pennsylvania Infrastructure Investment Authority.

There are a number of recent and active legislative proposals at the state level, covering a wide range of issues, that affect PAWC's operations. Included are bills involving investment funds for public water



and sewer projects (including several involving the Dam Project Fund), procedures to be followed on utility-industry restructuring, and other minor issues.

There are no public-opinion polls conducted for PAWC, except for an annual customer-satisfaction survey (on very broad customer satisfaction) and random inquiries of customers who have had recent contact with PAWC (again only in very broad terms of customer satisfaction).

Findings & Conclusions

Finding II-6 American Water's external relations function has been recently strengthened and is well positioned to support corporate objectives and regional/state efforts; however, the role of the Southeast Regional Director should be better defined.

Senior management of American Water and PAWC has recently strengthened the external relations function of the companies. (Refer to *Finding II-7* for a discussion regarding program development.) Since 2006 the External Affairs and Corporate Communications function has been led by a senior officer who has high-level visibility in the organization. (Previously this function was led by a VP position.) The Senior Vice President of Corporate Communications and External Relations has extensive experience in the communications field and, prior to joining American Water (approximately one year ago), was owner and president of her own communications consulting company. Directors heading up Advertising and Marketing, External Communications, and Internal Communications are all well qualified (in terms of both education and experience) for their roles. The Director of Government Relations and Best Practices is a newly created position and has not yet been filled.

The roles and responsibilities for these AWWSC positions are described in detail in job descriptions, which include primary roles, key accountabilities, an estimate on percentage of time spent on each one, key interfaces and relationships, and required education/experience/certifications. These roles and responsibilities are applied across the American Water system.

Regional directors are identified to provide local presence and expertise. These directors report directly to the Senior Vice President of Corporate Communications and External Affairs (American Water) with a dotted-line reporting relationship to the state presidents. The Southeast Regional Director for External Affairs (responsible for Pennsylvania) has over 28 years of experience with American Water in a variety of customer service and operations roles (she was recently a manager of district operations) and has been in her current role for three years. She manages a staff of 12 employees and is responsible for providing strategic input, from the state and local levels, to American Water external and corporate communication efforts. She is also responsible for interfaces with all outside publics. These contacts and efforts have been on an ad-hoc basis (as issues and needs arise). For example, AWWSC External Relations has identified the importance of and need to proactively address major problems (e.g., major main breaks, service disruptions, environmental issues, etc.) and are developing corresponding programs

to manage these problems and other AWWSC programs; however, these programs need to be substantively rolled out to the regions and states.

Finding II-7 American Water has recently developed a number of strategic external-relations programs; however, these programs have not yet been rolled out, and there are no regional or state-specific operational plans.

American Water has recently developed a number of strategic programs to enhance the corporate communications and external affairs functions. The most significant of these involve rate case communications, capital investments, and issues management.

The Rate Case Communications Strategy is a lengthy (65-five-page) document that defines outreach activities' toward regulatory agencies, state and local governments, customers, and the community regarding the need and rationale for rates. These communication activities are broken out by those in support of a rate filing as well as ongoing, year-round activities. This strategy has well-defined goals (transparency of information to promote trust, education, and promotion of value, and to identify and address concerns as ongoing goals; substantive and comprehensive education of all interested publics on the need for rates and value of investments that are specific to rate cases) and broadly defined activities (termed strategies) to accomplish these goals. Audience/stakeholders (e.g., state regulatory authority) and key messages (e.g., demonstrate how and why water capital investment is important to the community) are also broadly defined. The plan goes on to specifically lay out tactics (action steps) to implement with the media, customers, local elected and appointed officials, and employees. This plan also requires regional external relations to develop supporting rate case strategies and timelines. Templates are also provided for letters to customers, press releases, frequently asked questions, and other items. Although this document is only in draft stage, as of early 2008, it provides a good basis for increasing external communications and relationships with regulatory agencies, state and local governments, and local communities and ratepayers.

The Capital Investment Communications Strategy is a supportive plan to the above Rate Case Strategy to further communicate the need and importance of water infrastructure projects. This strategy is structured similar to the Rate Case Strategy and further details communication vehicles for communicating, on an ongoing basis, with customers, community, and legislative leaders, regulatory agencies, and the media. This plan is also in draft stage. Capital investment has been identified by American Water's senior management as a critical factor in American Water's future operation.

American Water has recognized the importance of identifying and even anticipating important issues and of addressing them in a positive and proactive manner. An Issues Management Protocol was recently developed (October 2007) that identifies issues by category (operational, environmental, and reputation), priorities of issues, broad strategies for identifying particular issues, profiling the issue (describing what the issue really is, its importance, who is affected, etc.), developing communication plan of action, assigning roles and responsibilities, assembling an Issues Management Team, and finally capturing key lessons learned.



A Collateral Overview Strategy has also been recently developed to serve as a living document to define standard communication packages that can be used throughout the American Water system. Examples include Investor Facts brochures, Community Facts brochures, state-specific brochures (e.g., what American Water does in those specific communities, partnerships, state contact points), and, notably, Regulator packages (information on consumer-education efforts, infrastructure updates, and other important issues).

All of the above documents provide a good basis for a substantive external relations strategy and effort, but they have only been recently developed and have not yet been rolled out for implementation. Of note is that these strategies (especially the Issues Management Protocol) rely on the activities of the regional and local external-relations personnel. Mention is even made in the Rate Case Strategy for supporting local operational plans. To date, these state-specific strategic/operational plans have not been developed, although there have been some recent efforts to develop outreach contact lists and communications time lines for upcoming rate case strategies. American Water has recently created a position of Director of Government Affairs, whose job description implies the responsibility to work with regional and state external-relations management and personnel to develop these supporting plans. This position has only recently been filled (December, 2007).

Recommendations

Recommendation II-3 Develop a regional/state operational external-communications plan. (Refer to Finding II-6 and Finding II-7.)

The Southeast Regional Director of External Relations, working with American Water's Corporate Communications and External Affairs Department, should develop a regional and state-specific (Pennsylvania) External Relations Plan. This plan should directly support and integrate with current and future American Water External Relations strategies and should contain, at a minimum, the following elements:

- ◆ A State Rate Case Strategy that reflects the American Water Rate Case Strategy yet features state-specific (Pennsylvania) details on contacts (e.g., specific regulatory, government, and community titles and names if possible), makeup of rate-case teams, calendars, communication vehicles, and reporting mechanisms. Action plans can be used to define and report progress on individual initiatives.
- ◆ An ongoing contact program, including development of a list or matrix of specific regulatory, government, community, and business contact points (titles of positions and names if possible) with specific company responsibilities to contact, a calendar for periodic contact, and a reporting mechanism for documenting topics, issues, feedback, follow-up action, etc. Government and community organizations should be proactively queried on perceptions, complaints, service levels, etc., and responses from this type of surveying should be analyzed for potential gaps in performance. Develop a database for capturing and analyzing these

potential issues. This type of key-stakeholder outreach program should identify and encourage American Water/PAWC senior managers to develop personal relationships with key external constituents and stakeholders who are important to American Water's/PAWC's business agenda. All of these relationships and contacts should be clearly and plainly documented.

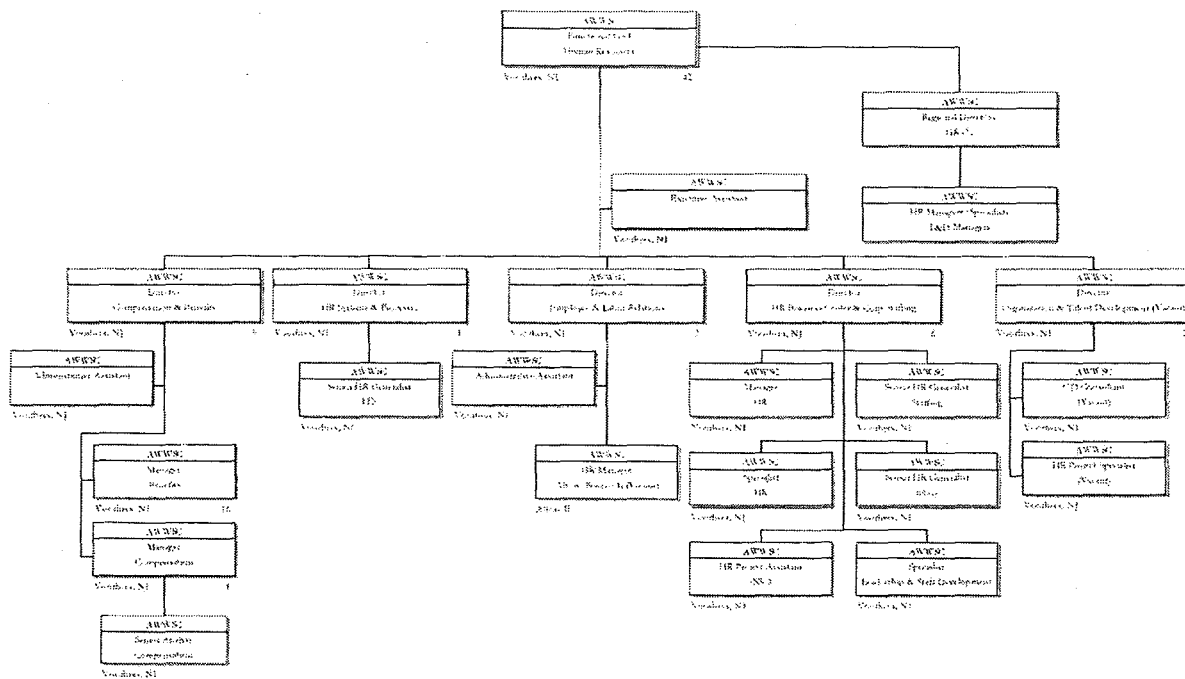
- ◆ A Corporate Citizen Strategy to define how much and where monies should be directed toward event and activity sponsorships, grants, contributions, and community employee involvement. For example, efforts can be prioritized and divided among education (e.g., promoting science and engineering in local schools/technical colleges with the potential payback of developing an engineering pool of future employees), environment (e.g., programs on education, conservation, protecting endangered species, etc.), arts and culture, and community and neighborhood development. A Regional Contributions Committee can be formed from the region's senior managers to develop guidelines and recommend disbursements.

All regional and state external-affairs managers should have these new responsibilities detailed in their job descriptions and their organizational functions should be spelled out in charters. The new American Water Director of Government Affairs should provide strong corporate (American Water) support to developing stronger external relations at the state and local levels.



Human resource (HR) services are delivered to American Water Works Company, Inc. (American Water) through a shared services model by the American Water Works Service Company (AWWSC) HR organization, which is organized as shown in *Exhibit II-6*. This approach assures consistency of policy and programs across all American Water business units while achieving some efficiencies over redundant local HR organizations.

Exhibit II-6
AWWSC Human Resources Organization
as of December 31, 2007

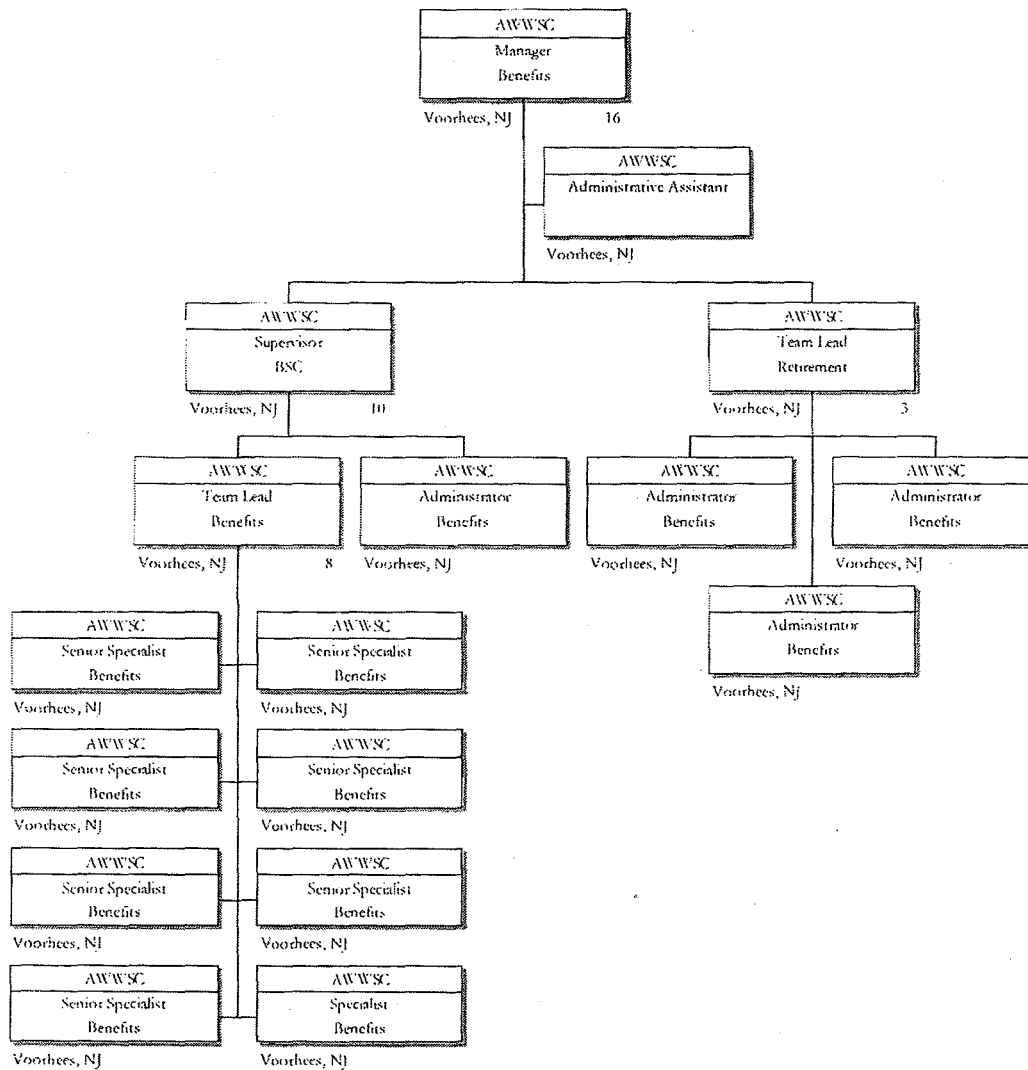


Source: Information Response 1, Interviews 21 and 22, and Company Comments

AWWSC has also set up a Benefits Services Center (BSC) organization to manage benefits across the American Water organization. Employees contact Benefits Specialists at a centralized call center to

receive information, make changes, and otherwise manage their benefits. This organization is described in *Exhibit II-7*.

Exhibit II-7
AWWSC Benefits Services Center
as of December 31, 2007



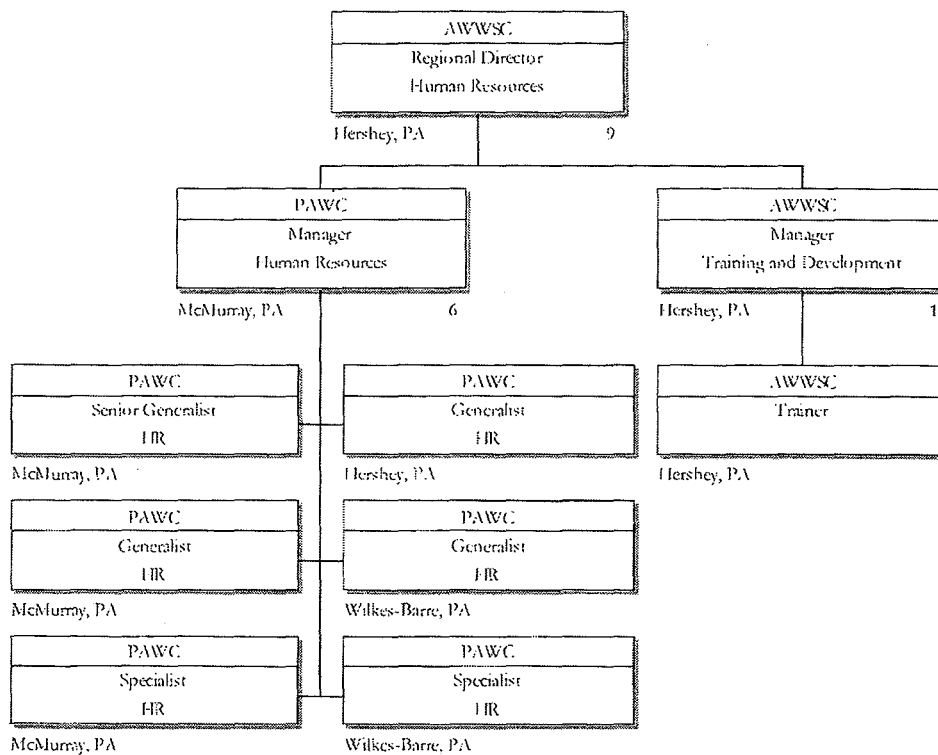
Source: Information Response 257 and Company Comments

AWWSC HR functions provided to Pennsylvania-American Water Company (PAWC) include employee and labor relations, compensation and benefits, HR systems and processes, and organization and talent development.



A small group of HR staff supports PAWC exclusively, as shown in *Exhibit II-8*. An HR Manager and four HR Generalists serve PAWC's day-to-day needs and are PAWC employees. These generalists are located in Hershey (1), McMurray (2), and Wilkes-Barre (1). The Manager and HR Generalists have responsibility for Pennsylvania employee and labor relations, staffing, wage/salary administration, legal compliance and policy implementation. There are also two HR Specialists (one in McMurray and one in Wilkes-Barre) who are primarily responsible for leave administration, including Family Medical Leave Act (FMLA) tracking, and who also assist with recruiting and wage/salary administration.

Exhibit II-8
Pennsylvania-American Water Company Human Resources
as of December 31, 2007



Source: Information Response 433 and Company Comments

HR Technology

JD Edwards World

American Water is using JD Edwards (JDE) as its primary Human Resources Information System (HRIS). The current version in use is JDE World Version 7.3.12. There are no plans to update to a newer release. (The current version available is 9.1.) American Water does, however, have plans to

modify the existing software. These modifications are detailed in a business case that has been prepared to support the decision to make them. *Exhibit II-9* details the objectives of the project.

Exhibit II-9
HR-Process Improvement Objectives
September 11, 2007

High-Level Business Objective 1: Improve JDE Functionality Within the Cum 12 Environment
HR-Related Objectives
Reduce time HR employees spend researching, processing, & reporting HR-related information
Reduce paper-based reporting for HR
Standardize codes to allow for easier, more consistent reporting
Reduce the need for ancillary databases for data analysis
Modify system to adequately prolong the useful life of JDE for HR
Improve the planning process through availability of HR-related data
Improve the timeliness and accuracy of communication to employees regarding changes to their record
Improve data integrity and reduce errors
Time-Entry-Related Objectives
Drive employees' responsibility and accountability for their time and attendance
Reduce time employees spend reporting time (both hours worked and not worked) – potentially through use of exception-based reporting for exempt employees only
Improve integration of Time & Attendance system with Financial system, including automatic tracking of vacation, illness, & holiday, etc. ... time; queries able to be run to access this information and create reports
To the extent possible, eliminate paper-based reporting for Time & Attendance
Eliminate duplicate time entry
High-Level Business Objective 2: Turn on Functionality Previously unused
Turn on Health and Safety module to assure capture of safety issues within the American Water core system
Turn on Workers' Compensation module to assure capture of work-related injury information within the American Water core system and reduce the likelihood of overpayments
Turn on Position Control module to facilitate role-based security and track the history of American Water positions
Turn on Applicant Tracking module to facilitate the importing of new hire data from Peopleclick
Turn on Job Requisition module to assure accuracy of budgeted headcount reporting
Turn on Wage & Salary module to facilitate salary planning and annual increase process
High-Level Business Objective 3: Improve Business Workflows
Implement workflow software to allow for some levels of automated approval routing

Source: Information Response 341

American Water has been using JD Edwards as its enterprise resource planning (ERP) for a number of years. The software, however, is not currently used to its full capability. Functions and screens are either not being used at all or are not being maintained. Turning on the functionality and populating



and maintaining certain fields will increase the productivity of Human Resources and the employee Service Center. In addition, it will streamline existing processes and protocols. The result of these improvements is increased customer and employee satisfaction.

The scope of this project is limited to improvements to the current version of JD Edwards. It includes turning on and populating currently unused modules, reviewing and cleaning up existing data, revising definitions of certain data elements, eliminating certain customization within JD Edwards to allow greater usage of the system's capability, and standardizing HR reporting.

Peopleclick

American Water uses Peopleclick RMS™ to manage the acquisition of employees. This software provides an efficient, cost-effective, and process-driven way to staff the organization. RMS provides employee-recruitment process management, from candidate identification and pre-screening to qualification and selection. Tied to powerful reporting and analytics tools, RMS provides enhanced visibility into diversity goals, recruitment performance, and strategic recruiting objectives.

Time and Attendance

American Water has four different time and attendance systems in use. It considers the system used in Pennsylvania as a model and seeks to broaden its use throughout American Water. This system was developed internally by PAWC.

ExecuTrack

Currently, American Water licenses ExecuTrack. The data for Executrack is used for the talent audit for ML (Management Level) 1 to 4 and some employees in levels 5 to 7, depending on their reporting relationship and potential for advancement. American Water, however, needs to go deeper into the organization to understand its bench strength in order to better plan and execute its business strategy. The first Organizational Capability initiative in 2006 encompassed approximately 300 employees, but American Water currently has the capability to include 400 individuals in ExecuTrack. As the company completes its divestiture, talent management will become increasingly critical. American Water will need to identify existing talent, assess and understand the strengths, and determine where it needs to invest in development.

ExecuTrack will provide American Water with the ability to effectively track and report on information regarding employee knowledge, education/certifications, skills, and abilities. As a result, American Water should be able to more effectively manage and develop its talent. Schumaker & Company see this as a critical need for the company going forward.

Findings & Conclusions

Finding II-8 AWWSC Human Resources has no direct accountability to PAWC.

The PAWC Human Resources Manager and the AWWSC Regional Training and Development Manager serving PAWC report to a Southeast Region Director, who in turn reports to a Senior Vice President for Human Resources in Voorhees. Human Resources functions performed by the HR staff assigned to Pennsylvania include employee and labor relations, staffing, wage/salary administration, legal compliance and policy implementation. There are four HR Generalists serving the entire state. These HR Generalists support all HR needs from offices in Hershey, McMurray, and Wilkes-Barre. A large percentage of their time is dedicated to staffing. There are also two HR Specialists (one in McMurray and one in Wilkes-Barre) who are primarily responsible for leave administration, including Family Medical Leave Act (FMLA) tracking, and who also assist with recruiting and wage/salary administration. The Pennsylvania HR Manager is the primary labor negotiator for PAWC collective-bargaining agreements, although the Regional HR Director has negotiated the most recent agreements in the larger bargaining units (Outside Districts, Pittsburgh and Wilkes-Barre/Scranton).

Although the PAWC HR Manager and her HR staff are PAWC employees, they report to the regional HR Director. The Regional HR Director and the PAWC HR Manager are described as having *dotted-line* reporting relationship to PAWC's President and PAWC management. However, in the case of the HR Manager, we would expect the opposite.

A regional Training and Development Manager and a Trainer also report to the regional HR Director. The Training and Development Manager is responsible for organization development, change management, and organizational effectiveness. She and the Trainer are focused on training as a component of organizational effectiveness. About 25% of the Training and Development Manager's time is spent on regional HR issues, while the remainder of her time is spent on Pennsylvania. Some time is also spent on American Water HR initiatives with a national focus.

We would agree that training and organizational development resources can be leveraged by the broader American Water organization. As such we would expect this to be a corporate position. Nonetheless, if 75% of the Training and Development Manager's time is spent on PAWC, we wonder if there may be a need for a full-time position in Pennsylvania.

As such, the purpose of the regional HR organization is not entirely clear to Schumaker & Company, although we suspect it makes sense for states where American Water has smaller operations with less regulatory scrutiny. From the perspective of PAWC, the regional HR organization puts important resources at arm's length.

This is not to say that it cannot work. Organizational development and the Regional Director spend a significant portion of their time on PAWC needs. Our concern is one of competing priorities and limited authority of the PAWC President to direct HR resources.



American Water's 2007 reorganization restored the state organization and the PAWC President position. This combined with the size of PAWC, its wide geographic scope, and the unique regulatory environment in which it operates, supports the need for a Human Resource organization that reports to the PAWC President and is aligned to the specific needs of this regulated entity.

Finding II-9 PAWC does not have a service level agreement with AWWSC that specifies the level of HR support to be provided.

Given the limited HR staff assigned to PAWC and the lack of a direct reporting relationship to PAWC management, Schumaker & Company looked for a service level agreement or similar document that would specify standards of performance by AWWSC. PAWC confirms that there is no service level agreement between PAWC and AWWSC.

A service level agreement is an important and, in recent years, commonly used document that defines a certain "level" of service that is to be provided by one organization to another. This agreement is expressed as a set of defined tasks and processes, each party's roles and responsibilities, and associated metrics of performance.

A paragraph in the 1989 AWWSC agreement with PAWC is all that defines the HR services provided by AWWSC. This paragraph reads:

G. Human Resources: Service Company shall assist in obtaining qualified personnel for Water Company; in establishing appropriate rates of pay for those employees; and in negotiating with bargaining units representing Water Company employees. It shall carry out training programs for the development of personnel and advise and assist Water Company regarding personnel. It shall also advise and assist Water Company in regard to group employee insurance, to pension and benefit plans, and in the drafting or revising of those plans when required. It will keep Water Company apprised of all employment laws and develop procedures and controls to assure compliance.

Most companies, in non-regulated industries, operating in a shared-services environment now have service level agreements in place that specify the resources dedicated to a specific unit. They also typically have clear metrics that define the quality and efficiency of the services provided. This type of agreement seems even more essential in a regulated affiliate relationship and, as we have indicated, does not exist for PAWC.

Finding II-10 Human Resources does not have standard metrics and does not make regular reports of its contribution.

Today's top-performing HR organizations measure and regularly report performance metrics. At minimum, these measurements include standard quality metrics related to cost, time, volume, errors, and customer satisfaction. More sophisticated measures are being implemented that relate directly to strategic outcomes and human capital contribution.

We found no such measures at PAWC. While some key indicators exist, such as time to fill on open staffing requisitions, turnover, grievance rates, etc., they are not tracked on a consistent basis nor regularly reported. We reviewed the HR performance measures specified in the Southeast Region Target Agreement. Measures identified in this document range from specific and quantifiable, such as "Reduce time to hire by 10% compared to 2006," to vague goals such as "Create work environment where each employee feels valued for their (*sic*) contributions regardless of individual differences." Goals such as these are important, but we would expect the measures to be quantifiable.

Activity and HR programs do not, in and of themselves, provide any insight into HR's effect on business results. We would expect a set of measures that reflect the full contribution of HR to PAWC's success. These measures should be continuously tracked and periodically reported to executive leadership.

This finding was addressed further as part of our *Phase III* efforts.

Finding II-11 Data integrity problems in the JD Edwards human resources information system makes for additional manual effort, creates opportunity for errors, and limits PAWC HR's ability to measure its effectiveness.

The lack of measures discussed above is driven in part by the lack of data. This was evident from our earliest interviews with Pennsylvania HR staff. The extent of the problem was better understood in subsequent interviews. Schumaker & Company did not perform an audit of HR data, but we were told that there is important data that is not captured (such as position control), there is inconsistent use of codes (such as location codes) and that data from the system must be manually checked (such as the utilization data for the EEO1). The data integrity problems were evident to us in our review of the affirmative action utilization data. We heard on more than one occasion, HR staff saying something to the effect of "you just can't trust anything that comes out of J D Edwards." A recommendation addressing this finding is included in *Recommendation IX-2 of Chapter IX – Diversity & EEO*.

As part of its Sarbanes-Oxley controls, HR implemented a JDE verification report in 2007, which requires HR to manually verify all new HR changes made in JDE against the source document. This will improve data integrity going forward. Unfortunately, it does not resolve existing data integrity problems and requires additional manual work.

Finding II-12 American Water Works Service Company and regional/local HR have extremely limited training and development capacity to support of the strategic HR needs of PAWC.

AWWSC has not filled (and is not currently seeking to fill) the corporate Organization Development (OD) Director position. The only person maintaining any responsibility for this work has been reassigned from Corporate OD to be the HR Manager for Corporate Staffs. Consequently, little attention has been paid to supporting the training and organizational development needs of American



Water in general and Pennsylvania in particular. American Water is working on developing a common approach to management/supervisor development. This approach is expected to have common core modules and specific modules to meet local needs. Although American Water expects to have an explicit strategy for management/supervisory/leadership development in 2008, no one is leading this effort and we have not seen any evidence that resources have been dedicated to this project.

In addition, when a company undergoes significant change, such as American Water's divestiture and restructuring, we expect HR to provide a high level of change management support. American Water simply has no capacity to provide this support.

Finding II-13 Pennsylvania training and development is focused on technical training and has not aligned to the broader strategic HR needs of PAWC.

The Pennsylvania Training and Development staff conducted a needs assessment in 2006 that identified three key needs: high-performing teams, communication, and performance management. During a meeting to present these findings and discuss action planning, the regional senior management team determined that "back to basics" technical training was a top strategic priority, and the focus shifted to technical training needs. As a result, HR set up a technical-training task force (18 managers volunteered) and the staff developed the "Basic Water Business" course for new employees, identified job-related curriculum topics for key functions, and coordinated water quality webinars with another region.

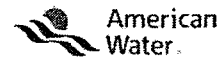
The Regional Trainer has also served as an internal resource for the development of safety training as defined by the American Water Learning Council. Although this was a one-time project, the Regional Trainer played a key role in the development and administration of *Arc Flash* training (safety training to help protect employees from an electrical explosion due to a fault condition or short circuit). The Training and Development staff also designed meter-reader training credited with improving the accuracy of meter reading. This training serves as a prototype for training to be offered nationally by American Water.

By all accounts, these are well-designed training programs that met a well-defined need. Our concern is the prioritization of limited resources on technical and safety training. Safety training generally must conform to state and federal standards and is therefore generic to an industry. As such, it is usually more cost effective to contract with an external vendor for such training. Although the Trainer for PAWC is planning to calculate a return on investment for the *Arc Flash* training, it is nearly impossible for this calculation to account for the lost opportunity costs associated with not addressing the strategic needs of the organization.

The training and development staff also designed meter-reader training credited with improving the accuracy of meter reading. This training serves as a prototype for training to be offered nationally by American Water. Unlike the training courses mentioned previously, this training is not entirely technical training and focuses on the impact of the meter reader role on billing, revenue and customer service that is unique to American Water.

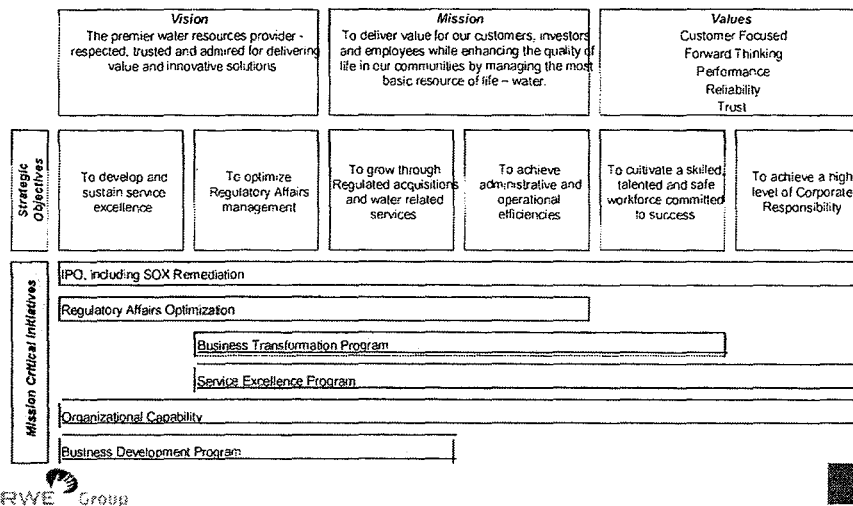
PAWC Training and Development is participating in a national Learning Council. This council was created as a strategic response to American Water's defined strategic priorities, as illustrated in *Exhibit II-10*. Specifically, it was formed in response to requests from the field for general technical training as well as specialized training for licensure.

Exhibit II-10
American Water Business Strategy
September 13, 2007



Strategy

American Water has identified its strategic objectives and will undertake several mission critical initiatives to implement its strategy through tactical plans



RWE Group

Source: Information Response 424

The Learning Council's mission is to develop and maintain a prepared and productive workforce that aligns with American Water's strategic goals. The specific 2007 goals of the Learning Council are:

1. Align and leverage current and emerging programs. Specific objectives include:
 - Ensure inventory of current technical-training programs
 - Evaluate current curricula as to strategic relevance & quality
 - Use systematic instructional-design guidelines for new programs (International Association for Continuing Education & Training (IACET) standards)
 - Effectively share knowledge across the company

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2. Provide implementation guidance for approved best operating practices. This goal includes change management, communications, and systematic instructional-design standards according to IACET.
3. Strengthen the Learning Council infrastructure. This goal includes stakeholder representation, member orientation, grant funding, and internal communication.
4. Develop and manage databases. These goals include the implementation of a Lotus Notes curriculum database and wider utilization of a compliance learning-management database.

We agree that this work is important and supports a strategic need for a skilled, talented, and safe workforce. Our concern is that this appears to be the primary focus of PAWC training and organization development activities.

We are also concerned that these initiatives address national needs and that PAWC resources play a substantial role in addressing these needs. If the need exists across the American Water enterprise, this again seems like a corporate role and that resources dedicated to PAWC should focus on the needs of the state organization.

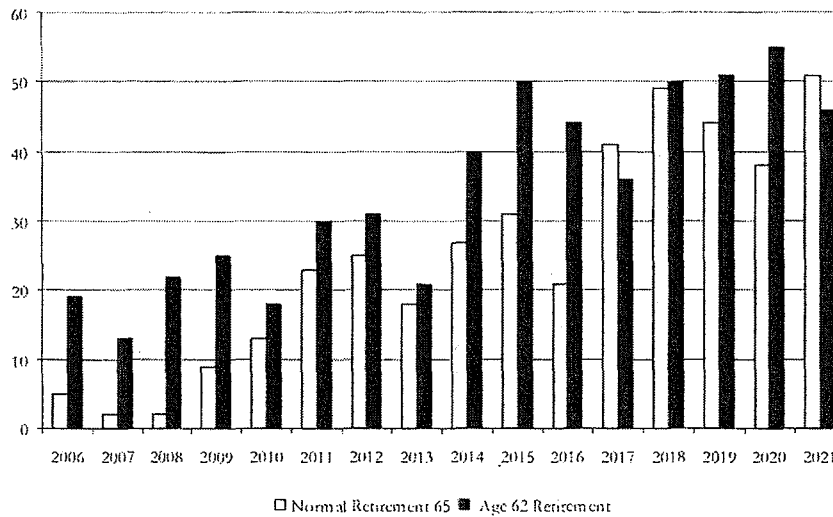
The President of PAWC has identified the need for culture change, a rededication to customer service, stronger connection to external stakeholders, and leadership development as strategic priorities. However, these goals are not currently the priorities of the Training and Development staff and have not received much attention from AWWSC HR. In fact, the one person in AWWSC HR who maintains any organizational-development responsibilities agrees that PAWC Training and Development is heavily involved in technical training and is not focused on other strategic issues. In fact, he was the first to suggest that Pennsylvania Training and Development should formulate strategies based on PAWC strategic priorities.

This finding was addressed further as part of our *Phase III* efforts.

Finding II-14 PAWC's Human Resources and executive management have recognized the loss of human capital and the potential for a large number of retirements in coming years but has not developed a plan to respond to these needs.

PAWC's Human Resources has performed an analysis of employees who are eligible for retirement in the coming years. PAWC expects most eligible employees to retire at 62 years of age and calculates that 23% of its employees will retire by 2014 and 48% by 2021. This estimate combined with regular attrition presents a *major* challenge to the company—one which the company has described as a "massive loss of institutional knowledge" and was described by one HR Manager as "horrifying." *Exhibit II-11* provides a yearly analysis of employees who are eligible for retirement.

Exhibit II-11
Retirement Forecast Thru 2021
Normal and Early Retirement



Source: Information Response 440

It should be noted that “eligible to retire” does not necessarily mean “will retire.” The decision to retire reflects a complex and often uniquely individual set of variables. Retirement income and healthcare benefits are often weighed against work satisfaction, lifestyle goals, health condition, and other factors. PAWC simply has not gone further to analyze the retirement intentions of eligible employees.

In 2006, the Regional Human Resources Director prepared a document describing the problem and outlining possible responses. This document further detailed the scope of the problem faced by the company:

- ◆ Inability to provide service to customers as required by regulators
- ◆ Lack of growth due to inability to support new customers
- ◆ Inability to comply with mandated maintenance and quality standards
- ◆ Work/life balance problems, leading to poor morale and retention issues
- ◆ Inability to perform capital work required to upgrade and maintain infrastructure
- ◆ Loss of reputation, as a reliable business and an employer
- ◆ Increased costs to attract and retain staff in a tight labor market

While the document lays out a number of possible strategies, it does not provide a specific recommendation nor does it include any implementation timetable. In addition, the document focuses on retention and workforce replenishment, suggesting that the workforce of the future will be much the same as the current workforce. Little consideration is given to changing needs of the organization and the potential for redesigned jobs.

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The 2007 Target Agreement for the Southeast Region specifies: "Implement recommended actions from 'Workforce Replenishment Document created in 2006' as a Target Measure". In fact, no implementation plan was created. A planned pilot project in western Pennsylvania was not implemented.

Finally, at the risk of pointing out the obvious, a goal is not a measure. We would expect to see specific retention, hiring, employee engagement, and training measures that demonstrate the effectiveness of the strategy.

This finding was addressed further as part of our *Phase III* efforts.

Finding II-15 PAWC does not have effective position control.

Position control is the accurate accounting of authorized positions and the number of individuals in a given classification. It is essential for workforce planning, budget control, and employment-law compliance. We would expect this control to be in place in the Human Resources Information System; however, the acting Vice President for Human Resources indicated that the function in the JD Edwards HRIS system does not work.

Requisition control is accomplished through Peopleclick, a staffing management software program. Use of this software allows the company to track all open positions, but it does not provide information on active employees nor can it tell the number of authorized positions versus actual number of positions filled. The company attempts to do a monthly reconciliation between Peopleclick and Hyperion (business-performance reporting system). The HR-Process improvement project does include implementation of the JDE Position Control Module but the status of this project is unclear.

Workforce planning is done primarily through the budgeting process. Each manager requests a headcount based on historical requests and planned work. But when Schumaker & Company asked for staffing data as part of the review of water operations, we were referred to the Affirmative Action utilization report. We would expect the company to be able to produce a position-control report that is independent of the Affirmative Action plan (and we would expect the Affirmative Action data to be validated against the position-control data). In addition, we discuss in Chapter X (provide title of Chapter as well) the problems associated with this report.

Given all of this, we are not confident that the company has the ability to comprehensively analyze its workforce and its future needs. When Schumaker & Company requested a status update on the HR process improvement project and specifically the position control module in JDE, we were told that the project is now in the planning phase. No further details or timetable was provided.

Finding II-16 A lack of reliable information on employee capabilities (bench strength) hinders PAWC's ability to respond effectively to current demands and plan for future growth.

During Spring/Summer 2006, American Water conducted an Organizational Capability Review (OCR). The objectives of this effort were to:

- ◆ Identify internal talent to meet our current and future strategic business objectives
- ◆ Calibrate leadership capability and bench strength
- ◆ Identify and develop potential leadership talent for key roles
- ◆ Execute action plans to close succession and competency gaps

The process consisted of a series of group capability-review sessions held at both the regional and corporate levels to review the top four layers of leadership (based on reporting relationship – President of PAWC and next one or two levels – a total of about 300 people for all of American Water). It also included a discussion of key business issues, the identification of potential succession candidates for key roles, and development actions to continue building a strong talent pipeline within the business. As part of the OCR, candidates were reviewed according to both their past performance and their assessed leadership potential. They were then identified for possible leadership positions in one of three timeframes: Ready Now (0–12 months); Ready in 1–2 Years; or Ready in 3–5 Years.

As a result of this process, the company reported, “Not surprisingly, given the 2004 reorganization, turnover, and subsequent high number of new hires to the organization, the bench strength in most functional areas is quite thin.”

We found a specific example of the effects of this limited talent assessment in the business case for ExecuTrack software:

“As an additional benefit, ExecuTrack will assist us in addressing our business needs, specifically in the areas of talent identification, tracking, and performance management. For example, American Water had some successes as well as some unsuccessful bids that were tendered in 2005. We can directly attribute the loss of some potential work in the Southeast Region to our inability to effectively identify talent to be assigned to those projects. What separated us from the successful bidders was their ability to identify up front the individuals within their organizations they were proposing be assigned to the projects (based on specific skills/education/license requirements, and work experience). They were then able to include these individuals in the presentation/selling process. Due to our lack of information, we were not able to compete on this level. The impact on operating revenue (before taxes) for the five (5) years of the proposed contracts that were lost was in excess of \$3.6 million. Based on this example, going forward, it will be even more crucial for American Water to effectively assign resources to projects and potential business acquisitions and to be able to do it in a streamlined and efficient manner.”



American Water had planned to conduct the OCR assessment further down in the organization in 2007. It appears this aim was not accomplished. More specific to this audit, there is no OCR for PAWC and we believe that this review is critical given the PAWC's future direction.

Finding II-17 PAWC has not met its goal to reduce time-to-hire by 10%.

PAWC Human Resources set a measurable target for 2007 to reduce time-to-hire by 10% compared to 2006. In 2006, the average time to fill a requisition was 63 days. A 10% reduction would, therefore, put the 2007 target at 57 days but the company was only able to reduce the average number of days to 60. *Exhibit II-12* provides the number of requisitions and the average time to fill for the last two years.

Exhibit II-12
Pennsylvania-American Water Company Staffing Requisitions and Average Time to Fill
2003 to 2007 (through February 2007)

Year	Number of Staffing Requisitions	Average Time To Fill
2003	Not available	Not available
2004	Not available	Not available
2005	88 (Western PA only)	25 (Western PA only)
2006	173 (PA)	63 (PA)
2007	206 (PA)	60 (PA)

Source: Information Responses 272, 273, and 849

The data for 2007 suggests that PAWC is not meeting its goal. We also note that PAWC had trouble producing these figures and required corrections to their original submissions. Our concern is that workforce availability is critical to utility performance. This key HR performance indicator should be tracked and reported regularly. In addition, workforce replenishment has been identified by PAWC as a critical challenge. As such, we would expect to see an effort to improve performance in this area.

Finding II-18 PAWC uses a time and attendance system with limited functionality that was developed in-house

Currently, PAWC uses a combination of systems to track time and attendance. The company makes some use of the JDE time and attendance module but relies primarily on the homegrown system. The company also does a significant amount of manual tracking, which results in significant paperwork. As we reported earlier, there is an HR Specialist for Pennsylvania who is primarily responsible for leave administration, including the manual tracking.

The time and attendance system can produce the following five reports:

1. Pay-periods-processed listing
2. HR-interface detail transaction listing
3. HR-interface error report
4. Payroll batch-file processing
5. HR-interface totals-transaction listing

We find this reporting capability to be of limited functionality. A more sophisticated time and attendance system would support leave administration and absence management and would provide reports useful to workforce planning.

In addition, this system is not a commercially supported one. Therefore, the risk of failure is greater and it will not have regular updates that are common with a modern system provided and supported by a third party.

AWWSC recognizes that using different systems in different places is a problem for the company and would like to move to a common platform. Unfortunately, this plan does not involve moving to a vendor supported system with sophisticated functionality. The company does not have a specific plan to modify or upgrade the Pennsylvania time and attendance system. Rather, they are looking to create a single time reporting system for all American Water that incorporates the best of the four systems currently in use. In February 2008, the company reports that the project, subject to approvals, is most likely to occur sometime in the 24 to 36 month timeframe.

We understand that time and attendance systems are expensive and can be difficult to implement. Clearly, American Water has chosen to save costs by using an existing system. We also note that American Water, time and attendance, as well as payroll, are owned by the Finance/Shared Services function, not the Human Resources function. Nonetheless, HR depends on the time and attendance system to support absence management and leave administration. In addition, it bears the cost of HR specialists whose primary role is leave administration and performs manual tracking of leaves that could be done by a modern time and attendance system. As such, we would expect HR to take a lead role in moving the company to a better system.

Finding II-19 **American Water/PAWC does not have a formal management development process.**

This finding repeats, to some degree, *Finding VII-4 in Chapter VII - Corporate Culture, Management Structure, and Staffing Levels*, but we believe it is important to reiterate it here as it relates to other findings in this chapter. Given the growth goals of PAWC, the limited bench strength of management (*Finding II-16*), the threat of significant retirements and the corresponding loss of institutional knowledge (*Finding II-14*), and the technical training focus of PAWC Training and Organization Development Staff (*Finding II-13*), we see a significant unmet need to develop PAWC's leadership capabilities. Unfortunately, PAWC has



no formal management or leadership-development process nor does it have a plan to implement a management/leadership-development program (although it does appear to recognize the need for one).

Finding II-20 PAWC does not have a learning management system.

PAWC HR does not have comprehensive data on employee training, training needs, certifications, licenses and other key data related to performance management and workforce planning.

Modern learning management systems provide a comprehensive database for learning records, competencies, certifications and related data. They provide sophisticated reporting training administration tools. These include course scheduling, employee self registration, manager access to employee records and training evaluation data. Increasingly, these systems also provide a platform for on-line learning. Some even integrate with performance management systems (work planning and evaluation).

Schumaker & Company believes that the high level of training needs and the limited training and development staff of PAWC argues strongly for such a system.

Recommendations

Recommendation II-4 Strengthen HR accountability to the PAWC President. (Refer to Finding II-8.)

The appointment of PAWC President signals the need for an organization that is fully responsive to the business needs and regulatory requirements of this organizational unit of American Water. Meeting the strategic objectives of Pennsylvania-American Water Company will require substantial HR support. We have made the point that HR leadership is aligned to regional and national priorities, perhaps giving less attention to Pennsylvania-specific needs.

At minimum, this would involve implementing a service level agreement (*Recommendation II-6*) and a HR scorecard (*Recommendation II-7*). In addition, the HR Director serving Pennsylvania should be evaluated, at least in part, by the PAWC President. Consideration should also be given to appointing a HR Director for Pennsylvania. PAWC is large enough to warrant an HR Director who is directly accountable to the PAWC President, with an indirect relationship to AWWSC HR and without regional responsibilities.

Recommendation II-5 Assess PAWC's HR needs and staff accordingly. (Refer to Finding II-8 and Finding II-10.)

Schumaker & Company is not able to determine whether there is sufficient HR staff to adequately serve the needs of the PAWC. Standard ratios cannot be applied. In the absence of a service level agreement,

we do not know the full-time equivalent (FTE) of the HR support PAWC receives from AWWSC; however, we have pointed to a number of factors that suggest HR is not fully meeting the needs of PAWC. We have identified unmet goals from the HR Target Agreement including such key goals as implementing workforce replenishment strategies, implementing the corporate diversity initiative, reducing time to hire, and increasing diversity hires. We have also identified the need for leadership development and the fact that Pennsylvania Training and Development staff have been largely focused on technical training.

As such, we recommend the PAWC clearly identify HR priorities and assess the capacity of the current HR organization to meet its needs. Where gaps exist, we believe additional resources should be provided to the function.

Recommendation II-6 Develop an HR service level agreement with AWWSC. (Refer to Finding II-9.)

AWWSC is a shared service provider to American Water affiliates (although the term is used only to describe financial services in this company). PAWC should have a specific agreement as is standard in shared services environments. The agreement should specify the services provided and the standards associated with the service. These standards should specify volume, time, and condition (quality) of service. Performance should be reported regularly and the agreement should be modified periodically.

Recommendation II-7 Develop a Pennsylvania-specific HR scorecard. (Refer to Finding II-10.)

It is an obvious follow-on to a service level agreement (SLA) that there be a standard set of metrics related to the standards in the SLA. We believe that the HR scorecard should include these metrics as part of a larger report on HR's contribution to PAWC. Consistent with the standard balanced-scorecard approach, we would expect to see measures that reflect the strategic, operational, financial, and customer (both PAWC management and employees) perspectives.

Recommendation II-8 Align HR services to the strategic priorities of PAWC. (Refer to Finding II-8 and Finding II-12.)

Human Resources in general and Training and Development in particular must align their efforts to the strategic objectives of PAWC. This aim requires a clear statement of the strategic priorities and a detailed plan from HR, with timelines and metrics, which spells out HR support.

Recommendation II-9 Consider outsourcing technical training. (Refer to Finding II-13.)

Designing and implementing technical training is not the highest and best use of the limited Training and Organizational Development staff. External vendors generally have standardized approaches and leverage higher volume to provide cost effective services. HR can provide strategic and administrative



support to the employee development (including technical training) but operations should own, manage and fund this need.

Recommendation II-10 Implement a learning management system. (Refer to Finding II-20)

Perhaps the most critical support that HR can provide related to employee development is a system to manage this function. Modern learning management systems streamline training administration and also provide a comprehensive data base of employee learning, competencies, licenses, certifications and related data. This data will not only support employee development, it will also support workforce planning, regulatory compliance and the staffing process. Such a system could also support a move to on-line learning where appropriate.

Recommendation II-11 Conduct comprehensive workforce planning for all levels of the organization and provide necessary resources for implementation. (Refer to Finding II-12 and Exhibit II-12.)

Given the long-term implications of retirement and normal attrition at PAWC, it is obvious that an action plan is needed. This plan should be more than a recruitment plan to replenish existing positions. PAWC needs to assess what competencies will be needed in the future. This is an opportunity to work with the union to redesign jobs for increased efficiency. In addition, the workforce plan should dovetail with the company's diversity initiative.

This plan should also address management succession planning at all levels. Again, the approach should be larger than a replenishment strategy but should also look to the leadership competencies that are necessary to fully engage the workforce, support a high-performing culture, and develop the leadership capacity of others.

While the loss of institutional knowledge is a challenge the company must face, the significant turnover in the coming years presents an enormous opportunity to change the corporate culture and develop a workforce that is fully capable of meeting the needs of PAWC and its customers.

The workforce planning process and associated strategies for addressing the future needs of the organization will require additional resources. The development of a comprehensive work plan should identify needed resources and form the basis for a business case for funding.

Recommendation II-12 Complete the Organizational Capability Review for all levels of PAWC management. (Refer to Finding II-16.)

Given the strategic priorities of PAWC, it is essential that HR complete an Organizational Capability Review for Pennsylvania and integrate into the performance management process. The process used for American Water's top 300 appears to be effective and should be applied to PAWC.

Recommendation II-13 Implement a leadership-development program and provide sufficient resources to sustain. (Refer to Finding II-19.)

Given the strategic priority for leadership development, it seems obvious that this priority become the focus of the Training and Development group within Human Resources. This goal means finding other resources to meet the technical and safety-training needs of PAWC. Although we recognize the need for American Water to have a consistent philosophy and approach to leadership development across the enterprise, we are concerned that it will provide neither sufficient resources nor move with due haste. Whether Pennsylvania is a model for the rest of the organization or part of a company-wide initiative, we believe that PAWC will need additional training resources to implement an effective program.

Recommendation II-14 Implement position control. (Refer to Finding II-15)

As described in Finding 8, this essential control tool is critical for workforce planning. Schumaker & Company also made note that this endeavor is included in the HR-Process Improvement Project and reiterate the importance on implementing this aspect of the project.

Recommendation II-15 Evaluate the costs and benefits associated with a more sophisticated time and attendance system. (Refer to Finding II-18.)

Schumaker & Company has identified a number of risks associated with the current time and attendance system. American Water should conduct a risk assessment of the decision to continue with (and expand the use of) a homegrown system. Schumaker & Company believes a cost/benefit analysis of available systems would likely support a decision to replace the current system. While HR does not have sole responsibility for this system, we expect them to play a key role in defining the needs of a new system and to gain substantial efficiencies from its implementation.

Recommendation II-16 Analyze recruitment and selection process, implement process improvements, measure performance, and provide additional resources if necessary. (Refer to Finding II-16 and Finding II-17.)

The root cause of the current length of the time it takes to fill a position is not entirely clear. Given the anticipated turnover at PAWC, Schumaker & Company knows this function will continue to experience high demand. Schumaker & Company recommends a complete process analysis to determine whether there are ways to make the process more efficient. In addition, Schumaker & Company recommends a complete set of metrics be identified, tracked, and reported in order to monitor the staffing function's efficiency and effectiveness. Finally, Schumaker & Company would expect the workforce plan to predict hiring needs in the coming years and provide a firm basis for determining whether additional HR staff is required.



III. Financial Management

This chapter provides a review of the financial management services provided to Pennsylvania-American Water Company (PAWC).

A. Background & Perspective

Financial services support to PAWC is provided by American Water corporate department personnel (part of American Water Works Service Company or AWWSC) reporting to American Water's Senior Vice President (SVP)/Chief Financial Officer (CFO), who reports directly to the American Water Chief Executive Officer (CEO) & President. There are 469 staff (as of October 2007) reporting to the CFO in eight departments: 1) Regional Finance, 2) Internal Audit, 3) Investor Relations, 4) Information Technology Services (ITS), 5) Treasurer, 6) Controller, 7) Planning & Reporting, and 8) American Water Enterprises (AWE) Finance. The Regional Finance departments are headed by Directors, while the other financial departments are headed by Vice Presidents, although all of the department heads have the same pay scale and grade. All of these departments, except for ITS and AWE, are reviewed in this chapter. The ITS Department is reviewed in *Chapter IV – Support Services*. The AWE Finance Department is not reviewed as part of this audit because AWE is a non-regulated entity and the AWE Finance Department does not provide services on behalf of PAWC.

The Regional Finance Directors are physically located within the five regional operations they support (Southeast Region, Northeast Region, Central Region, West Region, and AWE) in a matrix configuration. PAWC is in the Southeast Region, headquartered in Hershey, PA. The Regional Finance Directors support the Division Executive Vice Presidents (EVPs) for their respective division (Southeast Region is in the Eastern Division) and the State Presidents in their region, but they have a direct-line reporting responsibility to the CFO of American Water. The Regional Finance Director for the Southeast Region is located in Hershey, along with four financial departments: Rates & Regulations; Performance, Planning, & Reporting; Controls & Compliance, and Project Finance. The other American Water financial departments are located either at American Water corporate headquarters in Voorhees, NJ, or at the Shared Services Center (SSC) in Cherry Hill, NJ.

Exhibit 0-1 presents AWWSC financial organizations that support PAWC operations, along with a brief description of the functions they perform and the size of the staffs performing them.



Exhibit III-1
AWWSC Financial Functions
as December 31, 2007
Page 1 of 2

Organizational Unit	Financial Functions	Staffing
SVP & CFO		
Regional Finance Director-Southeast Region		2 (includes 1 support staff)
Rates and Regulations	Support rate-making efforts for three states, including Pennsylvania. There are six other Rates staff members in West Virginia supporting the other three states in the Southeast	5 (for the 3 states) with 11 for total SE Region
Performance, Planning, & Reporting	Coordinate development of five-year plan and annual budget Monthly analysis and reporting of actual results compared to budget Develop quarterly reforecast of budget Financial support for Business Development initiatives (one position that reports to the Director)	6 in Hershey 2 positions in other locations, plus 3 vacant positions
Controls & Compliance	Helps develop, manage, and monitor key controls for the financial functions in the Southeast Region	1 (plus 3 vacant positions)
VP, Internal Audit		1
Internal Audit	Internal audits of PAWC and the other state operations and corporate functions	6
VP, Investor Relations		1
Investor Relations	Planning, coordination, and communication required to be ready for American Water to go public	1
VP, Shared Financial Services		1
Accounting	General ledger accounting and financial reporting for PA and the other states in the Southeast Region	10
Financial Services – Rates, Fixed Assets, and Cash Management	Back-office support for rate case filings for all state operations Controlling, managing, and reporting on fixed assets for all of the state operations Day-to-day cash management and reporting for all of the regulated state operations	48
Financial Services -- Accounts Payable, Employee Services (Payroll), and General Tax	Process all accounts payable, payroll, and general tax transactions for all regulated state water companies	67
Support Services	Provides project management and systems liaison to Shared Services Center	8

Source: Interviews 65, 70, 74, 77, 124, 125, 126, 128, 129, 131, 132, 133, 134, 135, 136, 137, 138, 141, 142, and 157, plus Information Responses 1 and 532

Exhibit III-1
AWWSC Financial Functions
as of December 31 2007
Page 2 of 2

VP & Treasurer		1
Assistant Treasurer, Capital Markets, & Cash Management	Coordination and liaison with credit-rating agencies and bankers, and cash management accounting	5
Risk Management	Covered in another chapter in this report	1
Financial Evaluation, Benefits	Management of pension benefit plans and trusts and capitalization analysis	1
Treasury Planning & Reporting	Debt management, analysis, and reporting	1
VP & Controller		1
Income Tax	Federal and state income tax analysis, accounting, and reporting	12 plus 4 vacant
Corporate Accounting	General ledger consolidation and corporate accounting	8
Internal Controls	Development, management, and testing internal controls	6
VP, Planning & Reporting		1
Financial Modeling & Evaluation	Financial planning, modeling, and capital investment evaluation	3 plus 1 vacant
Business Performance Reporting	Financial and performance reporting for state, region	4
	Service Company financial planning and analysis.	4
		Total 213 plus 11 vacant

Source: Interviews 65, 66, 70, 74, 77, 124, 125, 126, 128, 129, 131, 132, 133, 134, 135, 136, 137, 138, 141, 142, and 157, plus Information Responses 1 and 532

All of these staff, with the exception of the Regional Finance Director (Southeast Region) and Accounting (Southeast Region) perform financial functions for all regions. The number of financial staff for all the regional positions is roughly comparable. Staff in other regions (Northeast, Central, Western) support their region/division, as does other Regional General Accounting support.

This *Background & Perspective* section is further divided into four segments:

- ◆ Financial Requirements Planning and Cash Management
- ◆ Managerial Reporting, Accounting, and Controls
- ◆ Budget Management, Reporting, and Control
- ◆ Internal Auditing



Financial Requirements Planning and Cash Management

Financial requirements planning and cash-related services for PAWC are the responsibility of several different American Water corporate financial departments, all of which report to American Water's SVP & CFO. Financial requirements and the monitoring of all funds are the responsibility of the Treasury Department, while cash accounting is managed and reconciled by the Cash Management group in the Shared Services Center. This hierarchy is true for all of the state-regulated operations, including Pennsylvania. Actual customer billing and collection is the responsibility of the Customer Relations Department, which is reviewed in *Chapter X – Customer Service*.

Cash Management

Cash from customer payments enter the American Water system through PAWC's lockbox accounts at Mellon Bank. Prior to 2008, Deutsch Bank also provided lockbox services (for state operations other than PAWC). Additional customer payments are collected through third-party collection sites at grocery stores and other similar retail establishments. All available funds are swept from this account on a daily basis into a common American Water account. The average daily balance for PAWC's Mellon Bank lockbox account for the past five years has been approximately \$900,000. The average daily balance for 2003 to 2007 is shown on *Exhibit III-2*.

Exhibit III-2
PAWC Mellon Lockbox Account
Daily Balances 2003 to 2007

Date	Average Daily Balance
2003	\$658,054
2004	\$873,748
2005	\$1,021,584
2006	\$958,824
2007	\$997,993
Total	\$902,040

Source: Information Response 38

Incoming cash in this cash account is reconciled by the Shared Services Cash Management group and is monitored by the Treasury Department. Reconciliation includes matching total cash received (according to Mellon Bank) to the total credited to customer accounts. Cash Management has a goal of reconciling these amounts within two days and is almost always able to do so within this timeframe. Effective January, 2008, Mellon Bank started providing check imaging for the PAWC lockbox. This imaging process allows American Water to research customer payment inquiries on a real-time basis through Mellon's website rather than having to request copies of checks or payment stubs. Cash Management's metrics are measured and reported in the Shared Services Center results, along with the other financial Shared Services departments. As an example of the metrics used by American Water,

several of Cash Management's metrics from June 2006 (not all of these specific performance metrics were tracked prior to June 2006) through September 2007 are shown in *Exhibit III-3*.

Exhibit III-3
Example of SSC Cash Management Metrics
June 2006 through September 2007

Cash Management Functions	Target	2006								2007							
		Jan	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Cash Collections																	
Processed in one day (100%)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Cash Disbursements																	
# of errors in payments - ACH & wire transfers	0	3	2	2	2	1	5	2	3	2	2	2	2	1	1	1	2
Late payments to municipalities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
NSF check turn-over rate - 2 days	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# of accurate ACH payments & wire transfers	n/a	1750	1789	1515	1156	865	1673	2032	1004	442	527	472	562	637	2197	2551	2037
Reconciliations																	
# of accounts beyond policy	0	0	7	4	4	3	3	1	0	0	0	3	0	0	4	4	19
Unrecorded items > 2 months	0	34	72	47	13	13	5	1	0	0	3	28	74	0	4	4	3
Unreconciled items > 10% of account balance and > \$10,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Accounts reconciled	160	136	136	136	136	157	157	159	160	160	160	185	151	175	170	173	153

Source: Information Response 553

This exhibit is presented as an example of the kind of metrics that are kept in the Cash Management area. It indicates that over this 16-month period, performance was very consistent, targets were generally met, and performance improved in 2007 over 2006.

Additional analysis is performed on all accounts requiring reconciliation and is summarized in a Reconciliation (Recon) Summary, a monthly report that displays a count of successful reconciliations compared to all accounts that required reconciliation. Zero balance accounts do not require reconciliation. A sample taken from the August 2007 Recon Summary is shown in *Exhibit III-4*.



**Exhibit III-4
Cash Management
Sample Excerpt from Reconciliation Summary
for Month ended August 2007**

Function	Description	Count	Count %	Regional Counts				Explanation
				CE	NE	SE	WE	
All Functions	Total accounts	10,806	100.00% "	3,047	1,989	2,903	2,867	
	Zero balance accounts	837	7.75% "	184	251	208	194	
	Accounts requiring reconciliation	9,969	92.25% "	2,863	1,738	2,695	2,673	
	Reconciliation completed	8,996		2,622	1,504	2,421	2,449	
	" " completed	90.24% "		91.58% "	86.54% "	89.83% "	91.62% "	
Cash	Total accounts	172	100.00% "	36	67	43	26	"Expense less than \$1,000. Due to reconciling items > 60 days.
	Reconciliation completed	153	88.95% "	36	52	39	26	
	Reconciliation not completed	19	11.05% "	0	15	4	0	

Source: Information Response 531

This exhibit shows that, in reconciling accounts, the Southeast Region is slightly behind the total account reconciliation for all the regions (89.83% compared to 90.24%) but slightly ahead in reconciliation of cash accounts (39/43 = 90.7% compared to 88.95%).

Cash disbursements for PAWC are the responsibility of the Cash Management group in the Shared Services Center, the same group that is responsible for reconciling accounts and incoming cash. This work group performs the same cash management function for all the American Water regulated companies. Cash disbursements for all regulated companies are made from one disbursement account in PNC Bank, which serves as the cash concentration and disbursement bank for all the other American Water regulated water utilities. The SSC Cash Management group manages this process and monitors all disbursement activities.

Financial Requirements Planning

The American Water subsidiary that serves as an internal bank for all the regulated operations is American Water Capital Corporation (AWCC). The AWCC acts as an internal bank, providing cash as needed to the regulated operating companies and receiving excess cash from operating companies as an investment. PAWC and the other regulated subsidiaries borrow from, and loan money to, the AWCC at the same rate. Borrowing and lending terms and rates for PAWC and the other regulated operating

companies are controlled by the AWCC service agreement in place since June 15, 2000, which governs transactions between regulated companies, American Water Works Company (American Water's parent company), American Water Works Service Company, and AWCC. The regulated water companies can go outside the American Water family to borrow funds when the rates are lower than what can be received by borrowing internally. For example, PAWC has borrowed locally from the Commonwealth of Pennsylvania, which offers water facility loans through the Pennsylvania Infrastructure Investment Authority (PennVest loans). These low-interest loans are available to pay for design, engineering, and construction of publicly and privately owned drinking-water distribution systems. Terms depend on the useful life of the asset being financed. At June 30, 2007, approximately 4% of PAWC's long-term debt of \$887 million was PennVest loans.

The Treasury Department monitors the cash balances of all the state operations to ensure that adequate cash is available for all operations. The Treasury Department also monitors the daily cash position of the corporation as well as each of the operating companies. This corporate department receives real-time transaction and cash-balance reports from PNC bank. A treasury workstation system hosted by an application service provider (ASP) is used to assist in this function. Treasury workstations are used for the following cash and liquidity management functions:

- ◆ Long-term debt management
- ◆ Short-term debt management
- ◆ Inter-company debt management
- ◆ In-house bank management
- ◆ Consolidation account
- ◆ Banking reconciliation
- ◆ Limited general ledger posting
- ◆ Limited financial reporting
- ◆ Purchase price variance reporting

Additional functions offered through the treasury workstations that American Water is considering include:

- ◆ Enhanced general ledger posting
- ◆ Daily cash positioning
- ◆ Cash forecasting
- ◆ ACH/wire disbursements
- ◆ Enhanced account reconciliation
- ◆ Enhanced financial reporting
- ◆ Bank relationship management
- ◆ Fair market-value management

On a daily basis, the Treasury Department will determine the amount of funds (net of disbursements) available in bank accounts for overnight or temporary investment, which primarily is the AWCC concentration account. (For example, the PAWC Mellon Bank account only represents one- and two-



day float amounts and associated funds are not available for possible overnight or temporary investment.) Available funds will be invested by AWCC in money market accounts or in securities such as commercial paper, reverse repurchase agreements, treasury bills, and other short-term liquid investments.

The Treasury Department develops a long-term capitalization plan for each regulated water utility, including PAWC. Factors that are considered in developing this plan include:

- ◆ Credit-rating impact
- ◆ Maturity profile
- ◆ Interest-rate risk
- ◆ Regulatory impact
- ◆ Tax implications
- ◆ Economic and market trends
- ◆ Accounting consequences

The debt/equity ratio for each utility is supposed to be based on the requirements of the applicable state regulator. The maximum debt level cannot be greater than 65% of total capitalization (as specified in the various bond indentures).

AWCC has credit lines totaling \$800 million with a number of banks. Additionally, there is an agreement to provide AWCC with a letter of credit up to \$150 million. The three main banks in this consortium are Credit Swiss, Citibank, and JPMorgan. Other banks in this group include Citizens, Morgan Stanley, and UBS.

American Water Works Company received an A- credit rating from Standard & Poor's in October 2006 and also in September 2007. Moody's assigned American Water a rating of Baa2 in October 2007.

American Water Capital Corporation has received ratings for the past five years for long-term debt and commercial paper. These ratings are shown in *Exhibit III-5*:

Exhibit III-5
AWCC Long-term Debt and Commercial Paper Ratings
2003 to 2007

	Standard & Poor's	Moody's
2003	A/NR	Baa1/P-2
2004	A/NR	Baa1/NR
2005	A-/NR	Baa1/NR
2006	A-/A-2	Baa1/P-2
2007	A-/A-2	Baa2/P-2

NR=Not rated

Source: Information Response 534

In its analysis of American Water Capital Corporation and American Water Works Company, Moody's stated that the one-notch downgrade of AWCC's senior unsecured debt had three causes: 1) the loss of implied support from RWE following the proposed American Water initial public offering (IPO); 2) historically weak consolidated credit metrics; and 3) the increase in financial and operating risk going forward as a stand-alone publicly traded company. The existence of a "support agreement" between the American Water parent company and AWCC, effectively backstopping AWCC's timely payment of principal and interest, as needed, was the reason given for the assignment of the Baa2 rating to senior unsecured debt of AWCC.

Managerial Reporting, Accounting, and Controls

Processes

The financial processes included under the broader functions of managerial reporting, accounting, and controls are carried out by corporate accounting departments located at the American Water corporate headquarters in Voorhees, NJ and the Financial Shared Services Center in Cherry Hill, NJ. Fixed assets, general ledger, accounts payable, payroll, and general tax work for PAWC are the responsibility of work groups under the VP, Shared Services, a group which is located in the Shared Services Center. Income tax and the responsibility for internal controls fall under the control of the AWWSC VP & Controller at the American Water corporate offices. Matrixed in with the operating management personnel at PAWC's headquarters in Hershey, PA is the Regional Finance Director and her staff. As a group they hold the responsibility for managing the periodic reporting and interpreting of actual financial results and providing a liaison between corporate financial offices and PAWC operations.

The accounting functions for PAWC and all of the other American Water operating entities are consolidated at the corporate level, with corporate representatives included in the local operations to provide the necessary financial support at the state level. Cash receipts and disbursements were discussed in the *Cash Management* section of this chapter. Basically, customer billing and collections, including accounts receivable, are consolidated at the corporate level (Customer Relations) along with cash accounting (Cash Management in the Shared Services Center) and cash control (Treasury), with transaction and balance information provided to the state level.

Likewise, the general ledger, accounts payable, fixed asset, payroll processing and reporting and general tax functions are performed by Shared Services for all of the regulated water companies, including PAWC. Transactions are processed at the Shared Services Center, and information on the details of the financial operations is provided through the liaison financial personnel to the PAWC management in Pennsylvania.

All PAWC invoices are received at the Shared Services Center in New Jersey. The accounts payable personnel use Real View Imaging (RVI) to scan invoices into the accounts payable module of the JD Edwards general ledger system. Accounts payable specialists are assigned by state responsibility and



invoices are segregated according to state. These specialists will code sales tax, vendor identification (ID), workbasket number, and representative individual, prior to scanning the invoice into RVI.

Supervisors access the invoices through JD Edwards and verify the accuracy and validity of the purchase. They then approve the invoice for payment. Terms of payment will have been established by another department (Purchasing). Invoices are filed onsite for 30 days so that they will be available to clear up any outstanding issues. They are then destroyed by an outside contractor.

The Shared Services General Tax Department is responsible for managing and accounting for all state and local taxes applicable to PAWC operations, with the exception of income taxes. These applicable taxes include the following:

- ◆ Sales and use
- ◆ Gross receipts
- ◆ Franchise
- ◆ Property tax

By centralizing the general tax function, American Water believes that it has achieved a higher degree of professionalism. There have been some issues with this function in the past concerning late filing of tax returns. This function had been part of Shared Services, was then transferred to the operating companies or the regions, and is now back in Shared Services.

To keep current on all state taxes and on rules and regulations governing the American Water property in approximately 1,000 counties throughout the United States, the General Tax work group subscribes to tax-updater information from Research Institute of America (RIA). This subscription allows the group to stay current on all state and local taxes. Documentation is maintained to verify that employees in this area have read the latest information available.

The General Tax work group uses a transaction tax-management systems application by Sabrix, Inc. (Sabrix) to evaluate accounts payable transactions to determine local tax applicability. Approximately 1,100 product codes have been assigned to all possible types of transactions. The Sabrix vendor maintains the system, which is updated monthly to ensure that the tax data is current. Purchase orders (unpaid) and standard invoices, customer refunds, electronic disbursement requests (EDRs), and P-cards (all paid) are uploaded into the system daily to be matched against the taxability matrix in Sabrix. Data on the tax calculated is transferred to the JD Edwards general ledger system daily, where a tax accrual is made. Tax payments to state and local authorities are made monthly.

Fixed assets for PAWC and all the regulated operating companies are managed and accounted for by a Shared Services work group that uses the PowerPlant system. This system, which was just implemented in 2007, interfaces directly with their general ledger system, JD Edwards. This system is commonly used by the utility industry and provides the necessary functionality to allow utilities to effectively manage their fixed assets. PowerPlant provides project management capability, consisting of work-order management, construction work in progress (CWIP) accounting, and facilitation of the capital-budget

development and asset unitization. Asset management features include management services such as cost accounting and pricing, CPR maintenance, depreciation studies, property tax management, and leased asset management as well as accrual and subledger accounting and calculations. The addition of the PowerTax module (in process of implementation at 2007 year-end) provides book-to-tax calculation and transactions, tax depreciation calculation, deferred tax calculation and facilitation, and tax provisions, including general-ledger mapping and calculation of effective tax rates. American Water management believes that PowerPlant will be a very valuable asset to assist their fixed-asset accounting. American Water is now working on developing custom reports from PowerPlant. With the acquisition of many companies with different types of fixed-asset records, management believes that some historical information of acquired companies is not maintained, because the detailed records were not available at the time of acquisition, but that presumption cannot be quantified. The fixed-asset recordkeeping habits of acquisitions continue to be a challenge for American Water.

Payroll (Employee Services) accounting for all the American-Water-regulated operations, including PAWC, is performed by another work group in the Shared Services Center. The payroll module of the JD Edwards financial enterprise resource planning (ERP) system is used in this accounting. Time entry for all regulated employees is conducted through a front-end system and interfaced into J.D. Edwards. Time reports are filed and kept for seven years. Non-union employees are paid on a bi-weekly basis. Union employees are paid on a weekly and bi-weekly basis. American Water's payroll includes approximately 7,000 employees across the country with 80 different union contracts. Every month, between 18,000 and 24,000 payments (checks or pay stubs) are distributed. The Cash Management work group prints pay stubs and checks, and mails them to employees' work locations. Approximately 70% of all American Water employees receive their pay through direct deposit.

Systems

American Water management since early in 2006 has been considering an upgrade to its accounting/payroll systems to gain some functionality. This upgrade need was being addressed with Thames Water (they were looking at SAP) before the decision was made to divest American Water and go public with an IPO. At that time, all planning and work concerning the upgrade of their current ERP or the exploration of a migration to a different system stopped. JD Edwards is considered relatively stable by American Water management and the financial functions indicate that no problems have been encountered with the general ledger system as a result of the number of transactions or the size of the system; however, American Water management has concerns about the lack of some automation features (refer to *Finding III-4*).



Exhibit III-6 lists the systems used by American Water and PAWC to support accounting and finance functions.

Exhibit III-6
Systems Supporting American Water's and PAWC's
Accounting and Finance Functions

System Name	Description
JD Edwards	Financial ERP system in which American Water currently uses the following modules: 1) General Ledger, 2) Accounts Payable, 3) Accounts Receivable, 4) Purchase Orders, 5) Inventory, 6) Payroll, and 7) Human Resources. JD Edwards interacts with the applications listed below.
Horizon/Blue Cross	Medical provider who processes all information pertaining to employee medical expenses.
Merrill Lynch	External vendor who processes all information pertaining to employee 401k. Customized interfaces are used in transmitting information on a weekly basis.
Aetna	External vendor who processes all information pertaining to dental/disability. Customized interfaces are used in transmitting information on a monthly basis.
Operations Parameter Database (OPD)	Contains information such as system delivery, water sales, customer counts, and unbilled revenue.
329-MD Operating Report	The Operational Data Report was developed to allow the business units to manage their responsible areas more efficiently. It was also designed for management to include in the Managing Director's Report.
Hyperion	Used for financial consolidation and reporting.
Treasury Workstation	Cash management system that is used to track cash movements within the company. System is interfaced with PNC Bank.
EX- Fax/EX Print	Third-party software used to automate the process of faxing purchase orders. Also allows custom formatting for AP and payroll checks.
RVI Imaging	External document-imaging system that allows document storage and feeds images into AP voucher process.
ECIS Billing System	Customized interfaces pass information into the financial system for credit refunds, summarized sales, and cash transactions.
PowerPlant (PP)	System for capital budgeting, project accounting, fixed-asset accounting, property tax, tax depreciation, deferred tax, tax provision, and internal and external capital lifecycle reporting for all legal entities of American Water. Customized interfaces have been written for passing information between PowerPlant and JD Edwards.
Vertex	Payroll tax calculator that maintains and calculates all payroll taxes and rules by locality.
Sabrix	Integrated solution with JD Edwards purchasing, payables, and inventory-management modules to meet its use-tax requirements.

Source: Information Response 49

Performance Metrics

Key finance and accounting functions performed by Shared Services for PAWC and the other regulated water companies are measured on a monthly basis. An edited example of some of these metrics in the 2006 and 2007 performance measures are shown below in *Exhibit III-7*.

Exhibit III-7
SSC Payroll, General Accounting, Rates, General Tax, & Accounts Payable Metrics
June 2006 through September 2007

Accounting Functions	2006								2007								
	Target	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Payroll																	
Payroll corrections	0	75	38	52	108	119	107	132	52	104	60	50	35	49	106	67	23
Payroll taxes filed timely (%)	100	95	100	100	100	100	100	97	98.6	100	92.1	99.4	100	100	100	99	100
General Accounting																	
Correcting journal entries	0	193	241	255	231	129	186	122	122	41	31	34	13	21	15	18	15
Established deadlines met (%)	100	100	100	100	100	100	100	50	100	100	100	100	100	100	100	100	100
Fixed Assets																	
FA subsystem reconciles to G/L (%)	100	99.98	99.81	99.98	99.86	99.91	99.88	99.88	99.92	99.92	99.86	n/a	n/a	99.79	99.30	100	99.87
Correcting journal entries	0	24	22	45	19	10	9	5	5	3	3	13	44	32	18	70	112
Rates																	
Tariffs loaded and tested (%)	100	100	100	100	100	100	100	100	100	100	100	94	100	100	100	100	100
Rate case data request sub. (%)	100	96	100	100	100	100	100	100	100	100	100	100	100	100	100	100	n/a
General Tax																	
Property tax payments filed timely (%)	100	n/a	n/a	n/a	n/a	92	98	99	96	95	99	99.9	97.5	93	98	71	99
Tax returns filed timely (%)	100	85	33	87	n/a	83	98	99.2	91	92	96	95	99	96	97	97	99
Accounts Payable																	
Invoice receipt to imaging (days)	3	4	5	5	3	3	4	3	2	2.4	1.7	1	1	1.7	1.7	2.1	1.2
Approval of invoices to processing (days)	3	5	4	4	4	5	5	5	4	4	4	5.2	3.3	2.61	2.55	2.9	5.1

n/a = not available

Source: Information Response 553

Although *Exhibit III-7* is primarily provided as an example of the type of metrics reported by the Shared Financial Services departments, it does reflect that American Water mostly met its target metrics and was very consistent over this 16-month period.

8/7/2008

Schumaker & Company



Forty hours of training is required for all Shared Services Center (SSC) employees. Such training is provided or coordinated by the Support Services work group. *Exhibit III-8* shows a list of the training classes offered in 2006 and 2007 and the number of SSC personnel who completed these courses.

Exhibit III-8
Training Provided to SSC Personnel
2006 and 2007
as of October 31, 2007

#	Training Course Title	# Completing Course	
		2006	2007 YTD
1	Utility Finance & Accounting – Level 1	115	54
2	Utility Finance & Accounting – Level 2	82	45
3	Service Company Billing & Accounting Training	22	
4	Sales and Use Tax	18	
5	ECIS Report Training	14	
6	SOX Overview Training	62	
7	SSC SOX Education Series – Account Reconciliation		84
8	SSC SOX Education Series – Financial Reporting Commitments		58
9	SSC SOX Education Series – Financial Statement Close		78
10	SSC SOX Education Series – Fixed Assets		44
11	SSC SOX Education Series – General Tax		27
12	SSC SOX Education Series – HR & Payroll		53
13	SSC SOX Education Series – Purchase to Pay		68
14	SSC SOX Education Series – Revenue		40
15	SSC SOX Education Series – Information Technology (IT)		39
16	Timesheet Training in JDE		18
17	Performance Review Form Training	31	
18	Avaya Telephone Training	166	
19	Create a Presentation Using the American Water Template	5	
20	LTM Generation II	118	
21	UPS Worldship Training	24	
22	Genesys Webconferencing 101	10	
23	Cool Functions in Excel	17	8
24	Advanced Excel 2003	84	
25	Excel 2000 Basics	15	
26	World Writer Level 1 Training	26	
27	World Writer – Part A		60
28	World Writer – Part B		52
29	Code of Ethics and Respect Training	309	
30	New Hire Orientation	56	103
31	Safety, Security, & Business Continuity Training	208	
32	Business Continuity Plan Training	38	
33	Setting and Achieving Your Priorities		70
34	Providing Constructive Feedback and Coaching		22
35	Driving Performance		50
36	SmartPros Orientation		10
37	Introduction to Access 2003		27
38	People Management Cycle		57
	TOTALS	1,420	1,067

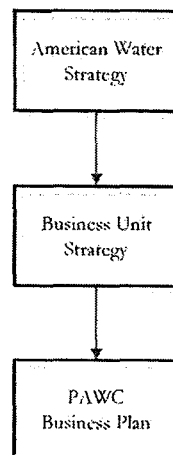
Source: Information Response 551

In 2006, 20 different classes were offered and 1,420 SSC attendees completed these courses. In 2007, 22 courses were offered and taught to 1,067 SSC attendees. Additionally, training is made available to all appropriate American Water personnel, including PAWC personnel, via Genesys conferencing/web training, On-Demand computer-based training, "train the trainer" training, and in-person training. The first 16 courses listed on *Exhibit III-8* represent financial accounting and control courses that would be considered appropriate and desirable for SSC financial management personnel to attend. There were 921 SSC attendees for the financial accounting and control courses over a two-year period. That number represents 37% (921 SSC attendees/2487 total attendees) of all training provided for SSC attendees.

Budget Management, Reporting, and Control

PAWC and all other American Water business units prepare annual business plans. At American Water, these business plans represent the impacts of ideas set out in strategic plans and converted into financial plans and budgets. The diagram in *Exhibit III-9* represents how the process flows from American Water down to the PAWC-level business unit.

Exhibit III-9
Budget Process Flows from American Water to PAWC
as of December 31 2007



Source: Interview 125

The business plan represents the translation of strategic intent into detailed implementation plans. As such, the business plan is designed to:

- ◆ Review business scope, capability, and environment
- ◆ Project business activities and identify actions required



- ◆ Assess enhancement anticipated and identify action required
- ◆ Set performance targets
- ◆ Facilitate understanding of financial performance
- ◆ Identify and develop financial and non-financial resources required

Annually, American Water will prepare a rolling five-year plan. The first year is the annual budget and is developed at the monthly detail level. The following four years are developed at the annual level, although including the same level of line-item detail. *Exhibit III-10* presents the steps in the American Water budget-development process and the timeframes in which they are conducted.

Exhibit III-10
American Water Budget Process
as of December 31, 2007

Step	Process Description	Time Frame
1	Profit targets by region and capital expenditures (CAPEX) targets by state	April
2	Develop corporate assumptions/plans – Agree profit and CAPEX targets, draft corporate assumptions, develop rate schedules, develop growth model, develop balance sheet model	May
3	Deliver business plan inputs – strategy, target confirmation, rates & regulations, economic assumptions, operations assumptions, HR assumptions, procurement assumptions, business development/growth, business efficiency initiatives, CAPEX, IT spend, tools, & models	May
4	Operations input to business plan	May
5	First draft AWWSC figures	May
6	RWE assumptions	June
7	First draft budget submission to corporate	August
8	Corporate finance, rates, and CAPEX review	August
9	Revised first-draft revision to regions	August
10	Regional revisions to business plan	August
11	Revised first-draft revisions to corporate	August
12	Final CAPEX plan	August
13	Second draft AWWSC figures to regions	September
14	CF()/CO() review	September
15	Executive management team (EMT) review	September
16	Second draft submitted to corporate	September
17	EMT review of second draft	October
18	Delivery to parent corporation (RWE)	October
19	Feedback from parent corporation	November

Source: Interview 51 and Information Response 52

Templates are used by regional and corporate financial personnel to develop the income statement and balance sheet for the budget. This information is then uploaded to Hyperion Enterprise (Hyperion 9 will be used for future budgets). Hyperion reports are validated to ensure the input was completed

accurately. Considerations in developing this material and sources for the various line items' underlying data are shown as follows:

◆ **Income Statement**

- *Revenues* – The revenue template takes into consideration the number of connections, usage, rates, system delivery, and non-revenue water/unaccounted water. The revenue is calculated for all classes (e.g., residential, industrial commercial, public authority, etc.)
- *Operating costs*
 - *Production costs* – These operating costs are developed using system-delivery expectations and future cost assumptions.
 - *Labor* – Headcount templates are used to determine labor costs, including overtime and capitalized labor, as well as employee taxes and benefits. Temporary employee needs are also determined. Other post-employment benefits (OPEB) and pension costs are supplied by the corporate organization.
 - *Service company* – The corporate component of AWWSC is provided by the corporate Financial Planning & Analysis (FP&A) organization. The regional component of AWWSC is developed based on input from functional department heads.
 - *Other Operating & Maintenance (O&M) expenses* – Department heads supply detailed input for expenses such as general office supplies and maintenance. Other expenses are determined based on input from the functional areas.
- *Depreciation/amortization expense*
 - *Depreciation expense* is developed based on the strategic capital expenditure plan (SCEP) template, existing plant, and expected retirements.
 - *Amortization expense* is based on balances and amortization periods.
- *Interest expense* is developed based on input from the Treasury Department.
- *Taxes* – Tax rates are based on input from the corporate Financial Planning & Analysis/Tax departments.

◆ **Balance Sheet**

- *Plant and equipment* – The SCEP template is used to determine capital expenditures.
- *Accounts receivable* – This balance is determined based on the revenue plan and days outstanding.
- *Accounts payable* – This balance is developed based on expenditure requirements and days payable outstanding (DPO).
- *Debt placements, equity infusions, and cash* – These balances are budgeted-based business needs with Treasury input.



- *Payroll accruals* – These accruals are developed using budgeted expense and expected requirements based on historical trends and current-year assumptions.
- *Regulatory assets/liabilities* – These balances are determined from input provided by the Rates Group, Planning, and Tax departments based on historical regulatory treatment.

American Water has a formal quarterly budget reforecast process. The quarter 1 budget reforecast (Q1RF) is produced in March with February YTD data, the Q2RF is produced in June with May YTD data, and the Q3RF is produced in September with August YTD data. The budget reforecasts go through much the same development and review process as the original budget. *Exhibit III-11* presents the Q2RF timetable for 2007.

Exhibit III-11
American Water Second-Quarter Budget Reforecast Timetable

Task	Owner	Due
Prepare and distribute guidelines and reporting template for Q2RF	Corporate Planning	06/01/07
Identify financing requirements for remainder of 2007 for Treasury to calculate interest	Business Units/Regions	06/04/07
Populate Q2RF with closed 2007 actuals and Q1RF for remaining periods (5 months actual + 7 months Q1RF)	Corporate Planning	06/12/07
Service Company Q2RF completed	Service Company	06/12/07
Calculate interest at business-unit level	Treasury	06/13/07
SCEPs finalized and provided to Regional Finance	Capital Program Management	06/13/07
Distribute management fees and business-change costs for Q2RF	Service Company	06/13/07
Provide interest to business units/regions	Corporate Planning	06/13/07
Pre-tax Q2RF loaded into Hyperion	Business Units/Regions	AM 6/20/2007
Tax provided pre-tax income and projection of permanent differences and significant temporary differences	Corporate Tax	PM 6/20/2007
Tax provides estimated tax requirement (ETR) for each entity	Corporate Tax	06/22/07
Taxes calculated and loaded into Hyperion	Business Units/Regions	06/25/07
Q2RF variance analysis due to Corporate Planning (profit & loss (P&L)): Q2RF YTD variances to Q1RF, total year budget (TYB) and last year's actual (LYA); B/S: 12/31/07 Q2RF to Q1RF & TYB)	Business Units/Regions	06/25/07
Q2RF tax review completed (written confirmation required)	Corporate Tax	06/26/07
Consolidation for Q2RF & intercompany reconciliation	Corporate Planning	06/26/07
Q2RF locked	Corporate Planning	06/26/07
Q2RF variance analysis due to Senior Management	Corporate Planning	06/29/07
Q2RF commentary due to RWE	Corporate Planning	07/12/07

Source: Information Response 52

Monthly reviews are held to discuss the PAWC financial results compared to annual budget, reforecasted budgets, and the prior year's data. The Southeast Region Financial Reporting Package (FRP) is developed under the auspices of the Regional Director Finance and is discussed in a monthly Financial Reporting Package meeting/call. Participants in this review include the American Water CFO, the VP & Controller, the VP Planning & Reporting, the VP Shared Financial Services, the Regional Director Finance, and the Shared Services Regional Accounting Director.

Recipients of the Financial Reporting Package, in addition to the participants in the meeting, include the Executive VP Business Operations for the Eastern Division, members of the Corporate Financial Planning & Analysis group, and the PAWC State President. Included in this report and discussed at the monthly meeting are the month, quarter, and year-to-date income statement and balance sheet compared to the original budget, the latest reforecast, and the prior year's results. Variance explanations are included whenever the assigned variance thresholds have been exceeded. Variance thresholds differ by state operations. Variance thresholds are crossed when a regulated state operation's income-statement line item differs from budget estimates by more than 10% and from an established dollar amount by state. Pennsylvania's established dollar amount is \$250,000.

After the Financial Reporting Package has been developed and discussed, the monthly Business Performance Package (BPP) is prepared, again, under the control of the Regional Finance Director. The BPP adds operating data from service delivery and operating initiatives and is currently prepared at the regional level only. American Water expressed plan to move this function to the state level in 2008. The BPP is discussed in a monthly business-performance reporting meeting. Participants in this meeting usually include the American Water President & CEO, the SVP/ CFO, the Chief Operating Officer (COO), the Eastern Division Executive Vice President, and the Regional Director Finance. Recipients of the BPP, in addition to the participants of the meeting, include members of the corporate Financial Planning & Analysis group and the PAWC President. Included in this report, in addition to the financial information from the Financial Reporting Package, are quarterly operational data and some additional financial information, such as key performance indicators, status of key initiatives, and major projects; return on average common equity, financial ratios, financial trends and mitigating action plans, and reports of regulatory affairs and rate cases; business development, environmental compliance and service quality, labor issues and risk summary, legal corporate governance and policy compliance, and external affairs and other legal operating issues.

The usual month-end financial-report development and meetings schedule is as follows:

- ◆ *Day minus 1* (one business day prior to the end of the month) – Meeting takes place with state representatives and State Presidents and their staffs, basically operating people who are aware of what will be reported for the current month.
- ◆ *Day 5* (fifth business day of the next month) – Preliminary results are provided (in the evening) to the participants of the next day's debriefing conference call.
- ◆ *Day 6*: (fifth business day of the next month, which was Day 5 in 2007) debriefing call – Although the books are not yet closed at this time, this call discusses the pre-tax results



(income statement, balance sheet, variance analysis, month-to-month trends, and questions to investigate). Adjustments can still be made that impact monthly financial results. This call includes the Shared Services Regional Finance Director; the Regional Director, Finance; the Manager – Performance, Planning, & Reporting; and their staffs, including state analysts.

- ♦ *Day 7* (seventh business day of the next month) (financial close) – Preparation of financial package begins using Hyperion 9.
- ♦ *Day 9 or 10* (ninth or tenth business day of the next month) – Perform state eliminations for consolidations.
- ♦ *Day 12 or 13* (twelfth or thirteenth business day of the next month) – Conduct Monthly Financial Reporting Package meeting and conference calls.
- ♦ *Day 15 or 16* (fifteenth or sixteenth business day of the next month) – Conduct Business Performance Report meeting – includes financial information and operating data with input from Legal, External Affairs, and operations; prepare BPP in Hyperion.

Internal Auditing

PAWC does not have a separate internal audit function. Instead, the Internal Audit function for PAWC and all of American Water's operations is performed by the AWWSC Internal Audit Department. This department is headed by the Vice President, Internal Audit (IA). The Internal Audit VP's reporting line is to the Chair of the Audit Committee and CEO, with a dotted line to the CFO for administrative purposes (i.e., approve expense reports, tracking vacation, and processing other administrative paper work). The CFO also prepares the Internal Audit VP's personal performance review and the department budget review, with approval by the CEO and Chair of the Audit Committee. During this review, the Chair of the Audit Committee and CEO provide input, which is documented by the CFO for review with the Internal Audit VP. The Chair of the Audit Committee also reviews the Internal Audit VP's performance during a face-to-face meeting each year.

The Internal Audit VP meets at least monthly with the CEO and at least quarterly with the Chair of the Audit Committee. Also, the Internal Audit VP meets monthly with the CFO for administrative purposes, as well as to have discussions regarding American Water's control strengths and weaknesses. Also, Internal Audit VP meets with all senior management (i.e. 23 individuals for the 2008 Internal Audit plan) to review control strengths and weaknesses, as well as gather input for annual planning and future audits.

The current IA staff has seven members, including the VP, Internal Audit. There has been considerable turnover (approximately 60%) in this department since June, 2006, when the VP joined American Water. IA turnover since June, 2006 is higher than would be normal in an IA function that was not rotating personnel through this group as a training vehicle; however, IA management indicates that this turnover reflects the need to upgrade the quality of staff so as to bring additional value to the IA process. Current staff members have backgrounds in Information Technology (IT), IT/Accounting,

Operations, and Engineering. Undergraduate college degrees include Accounting (4), Finance (1), Engineering (1), and Information Systems (1). Three staff members have earned Master of Business Administration (MBA) degrees. Professional certifications include Certified Public Accountants (CPAs) (2), Certified Fraud Examiners (CFEs) (2), Certified Information System Auditor (CISA) (1), Certified Internal Auditor (CIA) (2), and Certified Management Accountant (CMA) (1). The VP, Internal Audit intends to make this staff rotational in the future, with American Water personnel rotating through the Internal Audit Department to other parts of the company in a two- to three-year cycle. The Internal Audit Department would serve as a management development program. A formal program for this aim does not currently exist. Over the past 12 months, training for the entire Internal Audit staff included the following classes or subject areas:

- ◆ Sarbanes-Oxley (SOX) Act
- ◆ Committee of Sponsoring Organizations (COSO) of the Treadway Commission control model
- ◆ Risk/control assessment
- ◆ Interpersonal/communication skills
- ◆ Regulatory accounting

Additional training was provided to selected individual auditors in IT controls, tax and risk assessment, and data query using WIN Idea software. Future training plans include report writing, statistical analysis, process improvement analysis techniques and tools, and project management.

The Internal Audit Department has developed its audit process for compliance, operational, and information technology audits in accordance with the internal audit definition adopted by the Institute of Internal Auditors (IIA). This definition indicates that internal audits should "add value and improve an organization's operations ... by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control and governance processes."

Planning for internal audits conducted in 2007 was based on eight auditors in the Internal Audit Department, each with 161 workdays available for a total of 1,291 workdays for the entire audit staff. This total time was allocated to audits (60% or 775 workdays), SOX assistance (20% or 258 workdays), and management requests, investigations, or similar activities (20% or 258 workdays). To prioritize the areas to audit the following risk factors and applied weights were used:

- ◆ Internal control system (35%)
- ◆ Findings of last audit (25%)
- ◆ Changes in organization/processes/staff (25%)
- ◆ Legal or other external influences (15%)

Back-up risk factors and applicable weight factors were:

- ◆ Net profit of last fiscal year (25%)
- ◆ Revenues of last fiscal year (33%)
- ◆ Balance sheet total of last fiscal year (25%)
- ◆ Average number of employees in last fiscal year (17%)



Compliance audits are designed to assure that the company's activities comply with relevant laws, regulations, and company policy. Operational audits evaluate whether business divisions, functions, and/or activities are operating economically, efficiently, and effectively. Information technology audits examine IT controls and evaluate information systems, practices, and operations.

The Internal Audit Department has performed an average of almost 12 audits per year over the past five years, with the numbers falling off in 2006 (6) and 2007 YTD (July) (2). A list of internal audits performed in 2003 and 2004 are shown in *Exhibit III-12*.

Exhibit III-12
Internal Audits Completed by Year
2003 to 2004

Count	Plan Year	Audit	Date Issued	Status
1	2003	Energy Management	08/28/03	Completed 2003
2	2003	Cash Management	10/07/03	Completed 2003
3	2003	Commercial Development Process	11/06/03	Completed 2003
4	2003	ORCOM Applications	10/02/03	Completed 2003
5	2003	American Water IS Policy Review	09/18/03	Completed 2003
6	2003	Ad Hoc - Integration Management	10/31/03	Completed 2003
7	2003	VTs Travel Audit	10/31/03	Completed 2003
8	2003	Debt Management	10/09/03	Completed 2003
9	2003	IS Business Continuity Planning	02/13/04	Completed 2004
10	2004	AWWSC Payroll	02/02/04	Completed 2004
11	2004	AWWSC - Pension	02/17/04	Completed 2004
12	2004	IS Data Center Review - Haddon Heights, NJ	03/05/04	Completed 2004
13	2004	Pennsylvania-American Water Company ((Capital Expenditures/Operations)/Financial Control and Reporting (FCR)/Information Systems)	03/19/04	Completed 2004
14	2004	AWWSC - Customer Service Center	03/16/04	Completed 2004
15	2004	IS Change Management	02/27/04	Completed 2004
16	2004	AWWSC - JD Edwards	03/26/04	Completed 2004
17	2004	Property Development	04/26/04	Completed 2004
18	2004	IS Data Center - Alton	04/29/04	Completed 2004
19	2004	AWWSC - Internal Controls	05/26/04	Completed 2004
20	2004	IS Data Center Review - Belleville Lab	04/15/04	Completed 2004
21	2004	American Water Release Management	06/18/04	Completed 2004
22	2004	Metering Processes	09/02/04	Completed 2004
23	2004	IS Data Centre Review - Voorhees	10/07/04	Completed 2004
24	2004	IS Data Centre Review - Hershey	10/18/04	Completed 2004
25	2004	IS Data Centre Review - Mt Laurel, NJ	10/11/04	Completed 2004
26	2004	IS Operations. Sys. Rev. - OS/400	10/18/04	Completed 2004
27	2004	One-Time Cost	11/23/04	Completed 2004
28	2004	American Water Capital Corporation	10/20/04	Completed 2004
29	2004	Ideas Into Action	10/11/04	Completed 2004

Source: Information Response 61

Those performed in 2005 and through July 2006 are shown in *Exhibit III-13*.

Exhibit III-13
Internal Audits Completed by Year
2005 to 2006

Count	Plan Year	Audit	Date Issued	Status
30	2004	IS Network Security	01/14/05	Completed 2005
31	2004	Debt Management	02/04/05	Completed 2005
32	2004	IS Oper. Sys. Rev. - Unix	02/07/05	Completed 2005
33	2004	Business Development	03/22/05	Completed 2005
34	2004	IS Oper. Sys. Rev - Windows	07/25/05	Completed 2005
35	2005	End-to-End Billing Process	07/18/05	Completed 2005
36	2005	Commercial Development Process (Corporate Process)	08/11/05	Completed 2005
37	2005	AWWSC - Security	07/29/05	Completed 2005
38	2005	AWWSC - IS Infrastructure-Service/HelpDesk	08/10/05	Completed 2005
39	2005	End-to-End Payroll Process	09/21/05	Completed 2005
40	2005	AWWSC - Purchase Cards	10/04/05	Completed 2005
41	2005	STEP Program	10/07/05	Completed 2005
42	2005	AWWSC - IS Operating Environment Review - Notes & Intranet	11/04/05	Completed 2005
43	2005	AWWSC - Laboratories	11/22/05	Completed 2005
44	2005	Pennsylvania-American Water Company ((Capital Expenditures/Operations)/Financial Control and Reporting/Information Systems)	11/22/05	Completed 2005
45	2005	AWWSC - Disbursement Requests	11/16/05	Completed 2005
46	2005	American Water Capital Corporation - FCR	12/07/05	Completed 2005
47	2005	AWWSC - Cash Management (Receipts, Payments, & Recs)	12/07/05	Completed 2005
48	2005	AWWSC - Risk Management	12/14/05	Completed 2005
49	2005	AWWSC - AWWSC Co Billing	01/19/06	Completed 2006
50	2005	AWWSC - Post Project Appraisal (Service First)	04/10/06	Completed 2006
51	2005	AWWSC - Financial Processes (includes governance)	06/29/06	Completed 2006
52	2006	Operations Performance of Call Center Generated Work	04/12/06	Completed 2006
53	2006	Meter Reading	05/10/06	Completed 2006
54	2006	Accounts Receivable/Reporting	06/07/06	Completed 2006
55	2006	IS - Service First Application	06/20/06	Completed 2006
56	2006	IS - SCADA Systems	07/11/06	Completed 2006
57	2006	Compensation and Benefits	07/19/06	Completed 2006
58	2007	AWWS - Purchase Cards	05/08/07	Completed 2007
59	2007	AWWSC - Disbursement Requests	06/14/07	Completed 2007

Source: Information Response 61

Only two of the audits completed during this five-year period targeted PAWC operations, but this tendency is not unexpected. That is because almost all financial functions concerning PAWC and the other regulated state operations are conducted in a consolidated manner by AWWSC corporate departments. The VP, Internal Audit indicated that this department should be able to increase the current audit workload to an average of approximately 20, a target that is similar to the number of audits conducted in the 2003 to 2005 period, prior to his arrival. He indicated that he would probably need additional staff to reach that number of annual audits.

8/7/2008

Schumaker & Company



Both during an audit and at the exit interview for the audit, the audit findings, recommendations, and action plans are discussed with the management of the area being audited. Audit reports are distributed to the management of the audited area (including Operating or State Presidents of the area involved), to senior American Water management, to the Audit Committee chair, and to American Water's external auditors. Internal audit follows up with responsible parties on open action plans to verify resolution or obtain progress updates. The audit results can be escalated to senior management if appropriate corrective action has not been taken.

Telephone calls from employees or persons outside of American Water who had complaints or who wished to report irregularities, ethical issues, or complaints used to come in on the American Water "Hot Line" to the Internal Audit Department. These calls now go to an outside firm. Reports of calls are e-mailed to the VP, Internal Audit and to an AWWSC attorney, who acts as a compliance officer and the administrator of ethics calls. Calls can be anonymous and are classified in 21 categories. There is an Ethics Committee (created at the beginning of 2007), consisting of the CFO (chair), General Council, COO, HR, and the VP, Internal Audit. This committee meets at least quarterly.

B. Findings & Conclusions

Financial Requirements Planning and Cash Management

Finding III-1 PAWC cash is managed in an efficient and cost-effective manner by corporate cash management functions.

The American Water Works Service Company manages cash for all of its regulated operations, including PAWC, in a consolidated manner. The Shared Services Cash Management group manages and reconciles incoming and outgoing cash, and the Treasury Department monitors cash balances and manages banking relationships. Together, these two corporate departments help ensure that all available cash is utilized and all entities have adequate cash for their daily needs. Incoming cash is collected in a Mellon Bank lockbox account. Daily, all available funds are swept from this account for a consolidated investment by American Water Capital Corporation to money market accounts or to commercial paper or other short-term liquid investments. The daily balance in this account after the fund sweep has taken place has varied from a low of less than \$19,000 to a high of \$2.3 million over a five-year period. The average daily balance in this account during this timeframe has been \$902,040. These funds were not available to be transferred, representing one- and two-day float, or the time it takes for the funds to clear the banks on which the checks are drawn.

Cash disbursements for all regulated operations are made from a single disbursement account at PNC Bank. The Treasury Department uses a real-time connection to banking operations and a Treasury workstation system to monitor cash balances and movement effectively and efficiently.

Finding III-2 Long-term debt is obtained at favorable rates.

Because of the advantages of economies of scale in borrowing for all regulated water utilities, PAWC receives long-term funding through the American Water Capital Corporation. American Water policy states that if a lower-cost source is available, PAWC is free to use that alternative. PAWC has used low-cost water-facility loans through PennVest of the Commonwealth of Pennsylvania. These loans carry rates that are substantially lower than the other long-term debt PAWC carries. Interest rates on these PennVest loans vary from a low of 1.00% up to 4.19%, compared to notes payable to affiliates having interest rates from 4.92% (4.92% redeemed in 2006) to 6.87% and general mortgage bonds having interest rates ranging from 3.60% up to 9.71%.

Managerial Reporting, Accounting, and Controls

Finding III-3 The consolidated managerial reporting, accounting, and control functions serving PAWC are efficient and closely monitored.

All managerial reporting, accounting, and control functions supporting PAWC operations are handled by financial departments of AWWSC. All of these functions for all of the American-Water-regulated companies are consolidated at AWWSC. This consolidation allows for economies of scale for transaction-type activities, such as billing, cash receipting, accounts payable, disbursements, and payroll. It also allows for a greater concentration of expertise, knowledge, and experience than might be possible in less-concentrated operations. Additionally, American Water has developed a number of performance measures that it uses to monitor these kinds of functions. Monthly reporting of performance measures affords the customer that is buying these services (PAWC) the ability to manage these functions and to ensure efficiency and effectiveness. Trends over the past 16 months indicate that performance against these metrics has been consistent and, for the most part, has met target or been close to targeted results. Unusual variances are explained in the monthly reporting process.

Finding III-4 American Water's general ledger system is not current and has not recently been updated to add needed functionality.

American Water uses JD Edwards as its financial ERP system. This system has not been updated to the software's most current version. (American Water is using either JDE World Version 7.3.12, not 7.3.16, which Information Technology Services (ITS) indicates has additional functionality, or Version 9.1, which was recently released, although ITS indicates some enhancements have been incorporated). Several financial functions have noted during this audit that there was some functionality lacking in the version that is being used. Prior to the decision to divest from RWE and to pursue an IPO for American Water, plans were being made to explore alternative ERP options, including Systems Applications and Products (SAP). Additionally, the massive amount of work that has been expended on SOX compliance has drained resources that could have been used in planning for a system upgrade.



The company announced on November 2, 2007 that the responsibilities of a new role, Vice President of Finance and Accounting, is to include developing and implementing a strategy for a new financial system, which will be administered by the IT team.

Finding III-5 The AWWSC's Shared Services Center provides an extensive amount of employee training.

AWWSC's Shared Services Center requires that all employees receive 40 hours of training per year. A review of courses that were provided in 2006 and 2007 (through October 31, 2007) revealed a list of 38 different courses, running the gambit from technical financial classes such as "Utility Finance & Accounting" and Sarbanes Oxley control classes such as "SOX Education Series – Financial Statement Close" to more general classes involving "People Management" or "Driving Performance." In the two years reviewed, almost 2,500 attendees had completed the courses offered by the Shared Services Center.

Budget Management, Reporting, and Control

Finding III-6 The function of reporting actual financial results compared to budgets is managed and controlled effectively.

Monthly financial and operations reports are developed to monitor actual performance compared to plans. Variances are discussed and explained in these reports and in meetings attended by key American Water and PAWC management and staff. Budgets are reforecast quarterly in a formal process. Actual results are compared to the original and latest reforecast budgets and to the prior year's actual results on a monthly, quarterly, and annual basis. Performance measurements for consolidated activities conducted by the Shared Services Center are reported and reviewed on a monthly basis.

Finding III-7 Several key PAWC financial statistics have been deteriorating in recent years.

Key PAWC financial statistics for the past five years and through June 2007 are shown in *Exhibit III-14*.

Exhibit III-14
PAWC Key Financial Statistics
(\$ Thousands)
2002 to June 30, 2007

Key Statistic	Year					6/30/07
	2002	2003	2004	2005	2006	YTD
Operating margin	42.7%	41.8%	39.9%	40.3%	38.8%	37.0%
O&M (a) efficiency ratio	41.2%	42.2%	44.1%	42.8%	45.1%	45.4%
EBITDA (b) margin	56.2%	56.6%	52.2%	54.8%	52.5%	51.5%
EBIT (c) margin	43.2%	43.0%	39.4%	40.9%	39.1%	37.0%
Net income to common margin	15.9%	17.1%	15.5%	16.7%	15.4%	14.2%
Current ratio	248.8%	125.0%	164.0%	76.6%	83.6%	77.6%
Operating revenues	353,523	355,507	384,402	399,796	402,750	201,756
Operating income	150,802	148,478	153,236	160,980	156,253	74,697
O&M expenses	145,553	150,094	169,450	170,940	181,476	91,680
Net income to common stock	56,107	60,828	59,428	66,715	62,185	28,661
Depreciation and amortization	45,848	48,165	49,192	55,412	54,236	29,137
General taxes	11,568	9,001	12,836	12,652	10,877	6,241
Other income (loss)	2,303	4,663	(1,474)	2,734	1,139	10
Current assets	90,732	87,957	104,635	64,842	65,208	70,945
Current liabilities	36,475	70,357	63,793	84,610	78,023	91,410
Working capital	54,257	17,600	40,842	(19,768)	(12,815)	(20,465)

(a) O&M = Operations and maintenance

(b) EBITDA = Earnings before interest, taxes, depreciation, and amortization

(c) EBIT = Earnings before interest and taxes

Source: Information Response 56

These statistics indicate a gradual, but consistent, decline in PAWC's profitability and overall financial health for the past five and one-half years. The operating margin, which is a measure of a company's gross operating profitability, has decreased by 5.7 percentage points. Similar negative movements have occurred in PAWC's EBITDA margin (measuring the extent to which cash operating expenses use up revenue), EBIT margin (reflecting the cash available to pay off creditors), and the net income to common margin (an indication of how effective a company is at cost control).



During the same time period, PAWC's O&M efficiency ratio has increased by 4.2 percentage points. This rise reflects an increase in O&M expenses as a percentage of operating revenues, another negative measurement. PAWC's working capital (measuring the proportion of short-term liabilities that can be covered by current assets) has gone from a positive \$54 million to a negative \$20 million, indicating a decline in liquidity to accompany the decline in profitability and efficiency.

PAWC management believes that the information presented in *Exhibit III-14* reflects the company's decision to not seek rate relief prior to the most recent filing in April 2007. PAWC's prior general rate case filing was in April 2003.

Internal Auditing

Finding III-8 The Internal Audit Department is not sufficiently isolated from the Financial Management organization.

The Vice President, Internal Audit and the Internal Audit Department report, at least administratively, to American Water's SVP & CFO. Although the VP, Internal Audit also reports to the CEO and the Chair of the Audit Committee, the CFO prepares the performance review for this position. This performance review is then reviewed by the CEO and the Chair of the Audit Committee. The CFO also authorizes the VP, Internal Audit's personal leave and approves Internal Audit staffing levels, the speed of replacements, and internal auditor pay-grade levels which effectively impacts the department resource levels. The CFO does not direct the internal audit work effort nor does she approve audit projects, although she does have input into the audit planning process. This chain of command appears to place the Internal Audit function at least in part under the CFO, who is responsible for all the financial operations of American Water, including PAWC.

The Internal Audit function must be independent of the Financial Management organization. There should be neither the perception nor the actual situation whereby the Finance organization controls or exercises power over the same auditors who are auditing the financial activities. Even though there is adequate visibility with the Audit Committee, there is opportunity for inappropriate pressure to be placed on what should be an independent audit group is present.

Finding III-9 The number of internal audits conducted has declined significantly during the past five years.

The number of internal audits has declined considerably from 2003 to 2007. Audits completed in 2003 were nine, 25 in 2004, 17 in 2005, six in 2006, and two in 2007 YTD (July). It is difficult to compare the amount of work that went into internal audits in different time periods, because during this time, the audit process or philosophy might have changed, and certainly the resources, including the VP of Internal Audit, have changed. Nine auditors were in the Internal Audit Department in 2006 with a total of 1,475 available workdays, or 163 workdays per auditor. In 2007 the number of auditors was reduced

to eight with 1,291 total workdays or 161 workdays per auditor. The amount of time spent on audits was 60% of the total workdays available, with the other 40% being used to assist in the SOX efforts and to respond to ad hoc management requests, investigations, etc.

An average number of workdays per year for employees for most companies is usually around 220. This allows eight weeks for vacation, holidays, sick, and otherwise non-productive time. American Water's Internal Audit Department averaged 162 workdays for 2006 and 2007, 58 workdays or almost 12 weeks less than this standard.

American Water's Internal Audit Department uses an assessment of risk factors and assigns weights to prioritize areas to be audited. However, the number of audits conducted has been negatively affected by several factors. The first factor, the need to assist the Internal Control group in assessing the company's control environment to ensure compliance with Sections 302 and 404 of the Sarbanes Oxley Act may be receding as the controls have been developed. There could be a continuing need for testing controls and assessing their effectiveness that could require Internal Audit hours, depending on how American Water addresses this on-going requirement. The second factor, the reduced number of workdays available per auditor to perform all work (average of 162 workdays in 2006 and 2007) should be addressed. The difference between the average workdays per year available for each auditor over the past two years (162) and a more normal average of 220 workdays is 58 workdays, or almost 12 weeks. It is difficult to understand how these days could have been spent in training, administration, or other activities not related to audits, SOX, or ad hoc requests or investigations. This is too great of a period of time to be used for training or other administrative functions, and most of it should be applied to performing additional internal audits. Regardless, if only eight audits were completed in 19 months, the degree of exposure to risk could be questioned. Additionally, internal audits of cost accumulation, assignment, and allocation methodologies, factors, and systems are not regularly performed. (Refer to *Chapter VIII – Affiliate Interest* for additional information about this topic.)

C. Recommendations

Financial Requirements Planning and Cash Management

None



Managerial Reporting, Accounting, and Controls

Recommendation III-1 **Research and develop plans for upgrading or replacing the current ERP system. (Refer to Finding III-4.)**

Plans to upgrade American Water's current JD Edwards ERP system were stopped when the decision was made to divest American Water from RWE and to go public with an IPO (although some enhancements have been incorporated). Even if American Water does not want to upgrade its current system until it has gone public, planning for the ERP changes needs to continue. Ideally, when the organizational changes have been finalized, the ERP plans will have been completed and the upgrading of American Water's current system or replacement with a different ERP could begin after the IPO has taken place.

Budget Management, Reporting, and Control

Recommendation III-2 **Investigate why key PAWC financial statistics have been deteriorating, develop and implement a plan for improving PAWC's financial health as appropriate. (Refer to Finding III-7.)**

Several key PAWC financial statistics indicate a gradual, but consistent, decline in PAWC's profitability and overall financial health for the past five and one-half years. Such statistics include operating margin, EBITDA margin, EBIT margin, and net income to common margin, O&M efficiency, and working capital, as previously discussed. AWWSC/PAWC needs to perform an in-depth investigation to analyze why this is happening and what could be done to improve PAWC's financial health. Included as part of this investigation should be the development of a formal plan to make necessary changes toward addressing required improvements.

Internal Auditing

Refer to *Chapter VI-Corporate Governance Recommendation VI-4*, which addresses *Finding III-8*.

Recommendation III-3 **Assess the need for internal audits of American-Water-regulated utility operations and develop and implement plans to meet the internal audit requirements. (Refer to Finding III-9.)**

The risks associated with all areas of American Water should be evaluated, including an emphasis on regulatory cost centers rather than primarily the consolidated financial statements (which are the responsibility of the external auditors). That way, a determination is made as to the frequency and type

of internal audits that could be conducted. An audit plan should be developed annually so that all areas with perceived risk can be reviewed in a reasonable period of time.

The Internal Audit staff should have more workdays than their average for the past two years (162) available to conduct internal audits. Additionally, as the SOX controls are developed and tested more internal auditor workdays should be devoted to conducting internal audits, rather than assisting in the SOX arena.

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IV. Support Services

This chapter provides discussions regarding the following Pennsylvania-American Water Company (PAWC) support services

- ◆ Information technology (IT) and systems
- ◆ Transportation and fleet management
- ◆ Facilities and property management
- ◆ Procurement services and materials management (purchasing, vendor selection, contract administration, and inventory management)
- ◆ Risk management
- ◆ Legal services

A. Information Technology and Systems

This section provides a discussion of IT services provided by American Water Works Service Company (AWWSC) on behalf of PAWC. AWWSC is the non-regulated service company for American Water Works Company, Inc. (American Water).

Background & Perspective

Mission, Focus, & Objectives

All information technology services are provided to PAWC by the AWWSC Information Technology Services (ITS) organization. The mission statement of this organization is:

To be a valued business partner dedicated to providing information technology support and delivery of innovative, flexible, scalable, and secure solutions to meet business needs through standardized technology and processes in a cost-effective and efficient manner.

According to American Water management, much of the company's focus since RWE announced its divestiture of American Water has been Sarbanes-Oxley (SOX) compliance efforts. This emphasis has resulted from the anticipation of becoming a publicly-traded company. (Refer to *Chapter VI – Corporate Governance* for more discussion about these activities.) According to ITS management, ITS' SOX efforts to date include the following:



- ◆ Purely ITS efforts to modify the organization's own processes, including governance and project-management processes, in which examples of the types of documentation developed or enhanced included:
 - Policies
 - Practices
 - Charters
 - Standards
 - Implementation plans
 - Swim lanes (or process flow diagrams that depict what or who is working on a particular subset of a process)
- ◆ Supporting business units (BUs) or special teams that provide committee authorization of technology changes in their SOX compliance efforts
- ◆ Access management/security remediation of issues

ITS management believed that its policies and procedures prior to its SOX efforts needed more formalization. Such documentation was reviewed by ITS leadership and functional experts, including a Policy Panel Review group.

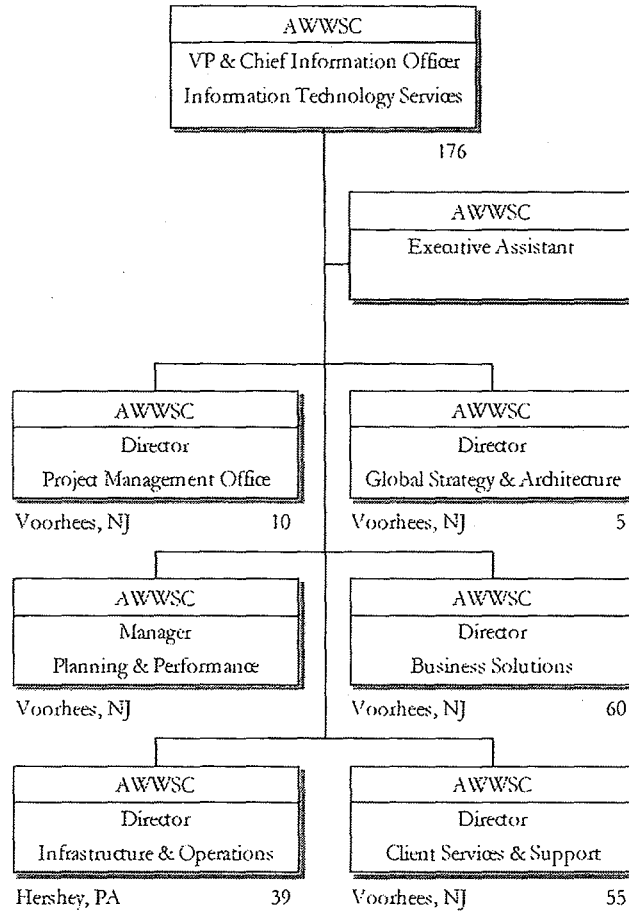
The 2007, ITS objectives included SOX certification/IT compliance, day-to-day support for business, development of a long-term IT strategy, improvements of services and performance, and execution of projects and enhancements approved and ranked by the IT Steering Committee.

Organization & Staffing

The AWWSC ITS organization is led by a Vice President (VP) & Chief Information Officer (CIO) and is composed of six ITS groups that are primarily located in Voorhees (NJ) and Hershey (PA), plus site support and backup locations. These groups, illustrated in *Exhibit IV-1*, are:

- ◆ Business Solutions
- ◆ Infrastructure & Operations
- ◆ Client Services & Support
- ◆ Project Management Office
- ◆ Global Strategy & Architecture
- ◆ Planning & Performance

Exhibit IV-1
AWWSC Information Technology Services Organization
as of December 31, 2007

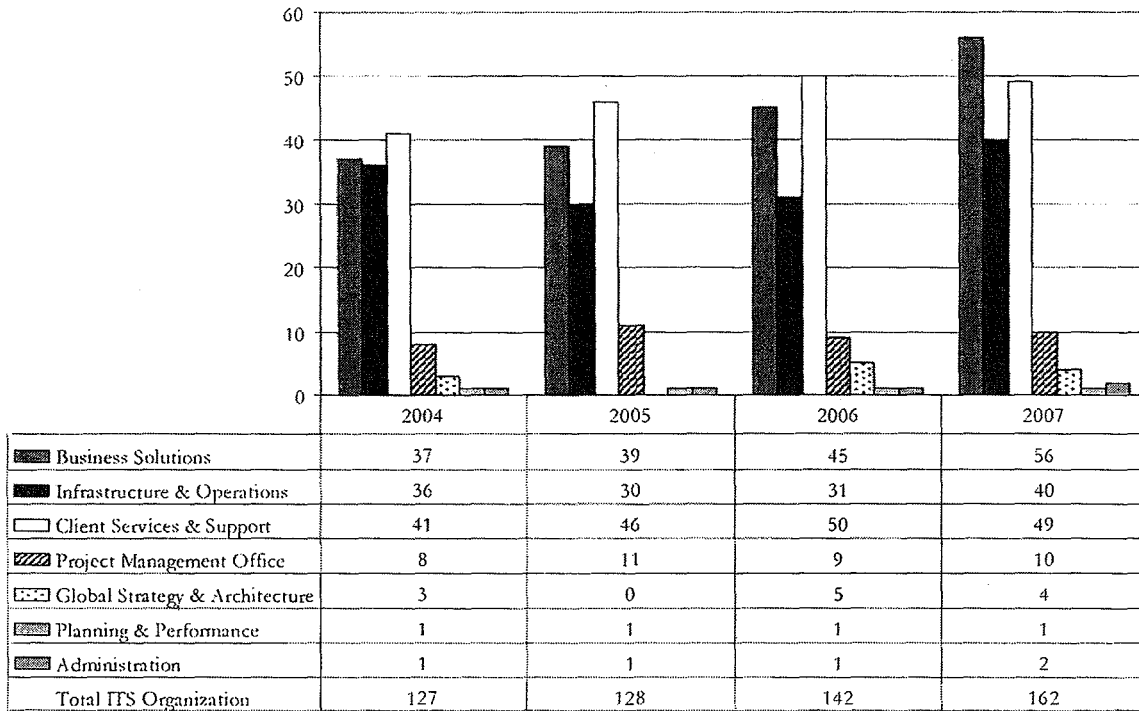


Source: Information Response 257

At the end of 2007, the ITS organization had 177 approved positions, of which 162 were filled. The staffing levels of the ITS organization over the last four years are shown in *Exhibit IV-2*. The majority of the ITS organization is a shared-services function that provides support to all American Water businesses. Those positions that are dedicated to providing PAWC support were set at five for 2004 to 2006, but they increased to six in 2007.



Exhibit IV-2
ITS Staffing Levels
2004 to 2007



Excludes vacant positions (see *Exhibit IV-19* for actual (above) versus budget comparisons)

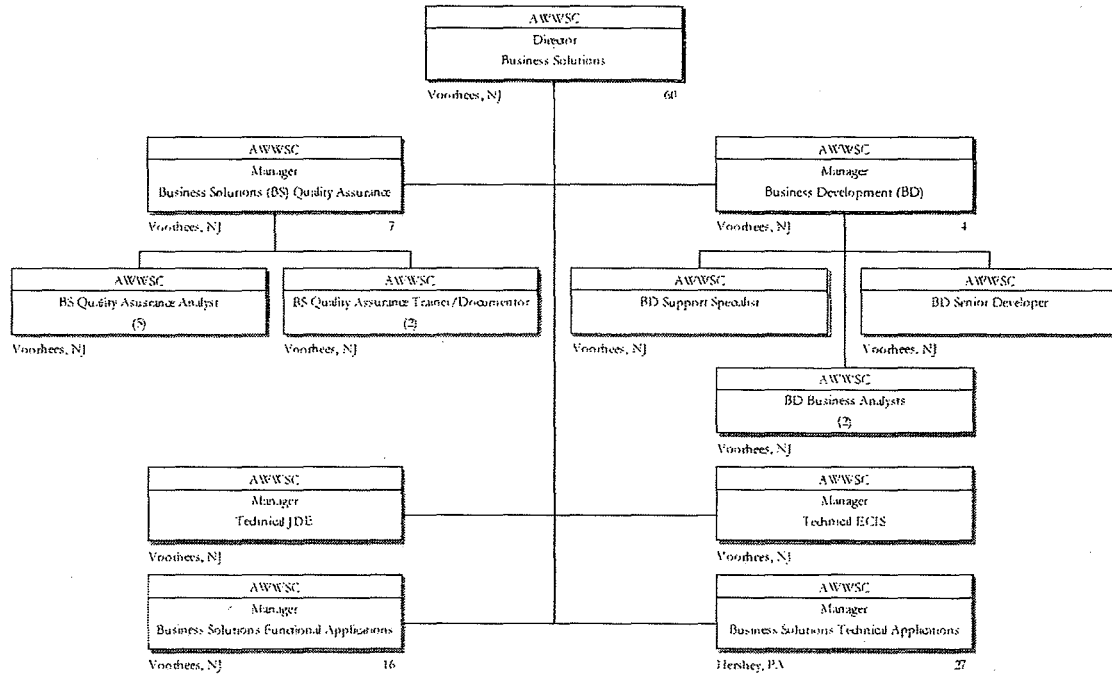
Prior to 2004, the ITS organization was not set up in the current structure and, as a result, information is not readily available.

Source: Information Responses 67 and 765 and Company Comments

Business Solutions

The Business Solutions group, which is illustrated in *Exhibit IV-3*, was formed in 2004 as part of restructuring efforts to work with business units (BUs) on application and data.

Exhibit IV-3
ITS Business Solutions Organization
as of December 31, 2007

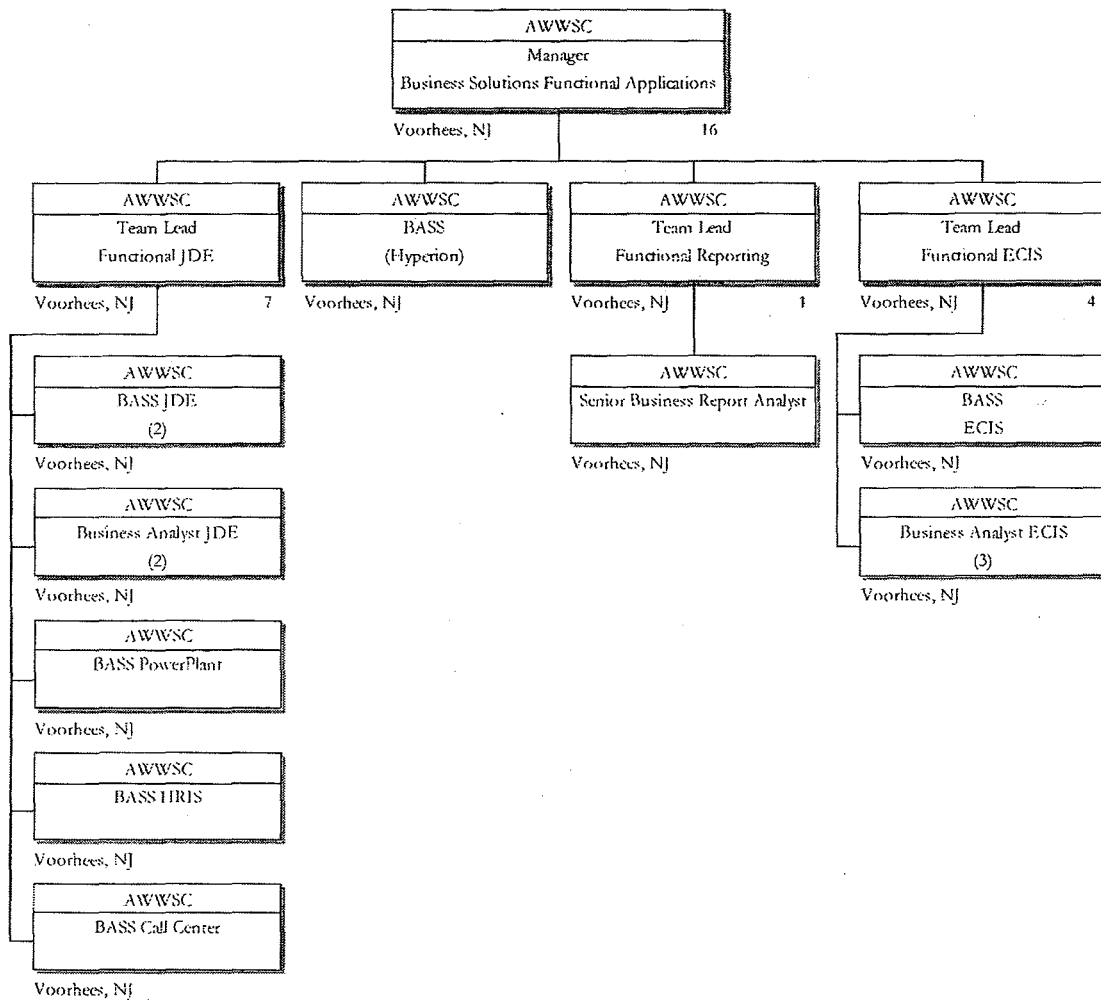


Source: Information Response 257 and Company Comments



The Functional Application and Technical Application groups within Business Solutions are shown respectively in *Exhibit IV-4* and *Exhibit IV-5*.

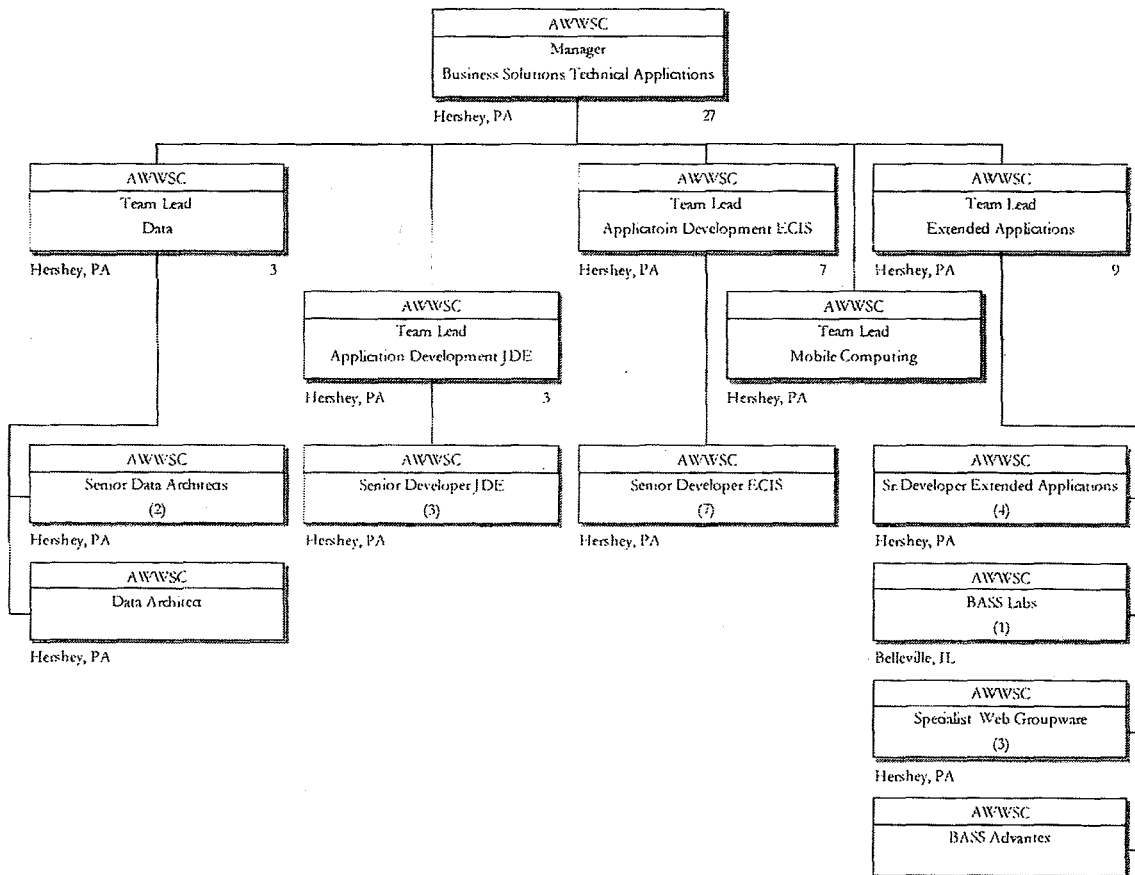
Exhibit IV-4
ITS Business Solutions Organization
Functional Applications
as of December 31, 2007



Business Application Support Specialist (BASS)

Source: Information Response 257 and Company Comments

Exhibit IV-5
ITS Business Solutions Organization
Technical Applications
as of December 31, 2007



Business Application Support Specialist (BASS)

Source: Information Response 257 and Company Comments

An employee's typical pattern is to first gain experience in particular application(s), often smaller ones, to then become familiar with applications of a larger size, and finally to become involved in cross-training of various modules. Each employee is supposed to have a development plan that includes success measures associated with development objectives and activities. Most employees in the ITS organization have a technology background, but some come to the ITS organization from BUs, with the aim of becoming Business Analysts and Business Applications Support Specialists. When hiring employees, the Director looks for a mix of experienced and junior staff; however, this group leans more toward experienced staff, a hiring pattern the Director expects to continue.

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Exhibit IV-6 illustrates 2007 key performance indicators (KPIs) for the Director position, from which success measures for other Business Solutions employees are derived. The 2007 results, although not specifically illustrated in *Exhibit IV-6*, indicate that the targets for these metrics are being "met."

Exhibit IV-6
KPIs for the ITS Director of Business Solutions
as of December 31, 2007

KPI Description	KPI Formula	Weight	KPI Targets
Finance			
Manage operational spending within the budget established for respective area	Percentage of Q3 operating forecast underspending or overrun	15%	Exceeds: -3 % to 0% Meets: Over -3% to -5% Fail: Over 0% or over -5%
Customer			
Quality support of IT initiatives (projects, enhancements, break-fix, and maintenance, O&Ms, and tuck-ins)	Achieving average ranking of 90% or above	25%	Exceeds: > = 95% Meets: Between 85% and 95% Fail: 85% or less
Quality support of day-to-day operations	Achieving average ranking of 90% or above	5%	Exceeds: > = 95% Meets: Between 85% and 95% Fail: 85% or less
Processes			
SOX and external audit compliance	SOX and external audit compliance; no major weaknesses	25%	Exceeds: Certified, no weaknesses Meets: Certified, minor weaknesses Fail: Failed, major weaknesses
Enhance operational integrity and excellence	Continued improvement in mega processes	15%	Exceeds: Significant improvement Meets: Acceptable improvements Fail: Insufficient improvements
Employee			
Timely and effective staffing	Achieve targeted vacancy % level by year end	10%	Exceeds: < or = 3 % Meets: > 3% and < = 5% Fail: >5%
Development and training	Percentage of employees whose skill level increased as targeted in development plans	5%	Exceeds: > = 95% Meets: Between 85% and 95% Fail: 85% or less
		100%	

Source: Information Response 618 and 744

Some of the major systems supported include:

- ◆ JD Edwards World (financial management of enterprise resource planning (ERP) modules, excluding budget management)
- ◆ Electronic Customer Information System (E-CIS) (customer services, including tracking of customer, account, premise, and service information)
- ◆ Hyperion (financial reporting and consolidation, initially used for budget management and eventually to be used for providing data on performance management)
- ◆ Sabrix (sales-and-use tax management)
- ◆ PowerPlant (fixed-assets management)

- ◆ Advantex (workforce automation)
- ◆ AdvantGard Integrated Cash Management System (ICMS) (only hardware and backend technologies of cash management system as Treasury support software)
- ◆ Meter shops/reading
- ◆ Others

Currently, American Water supports a hybrid of homegrown and packaged software applications; previously, most were homegrown applications. Although American Water is moving toward greater use of software packages, the ITS organization usually creates interfaces internally. That is because having a vendor do these interfaces is frequently expensive and creating them internally helps create ownership. Historically, ITS has driven application decisions, but the organization believes that BUs are becoming more knowledgeable about technology and applications.

Currently, this group has major projects under way, including:

- ◆ Billing and collections enhancements to E-CIS application
- ◆ Identity access management (IAM) security enhancements
- ◆ Advantex/Service First software upgrade
- ◆ Telephony redesign
- ◆ Internet redesign, including movement of ITS portal to SharePoint technology
- ◆ Divestiture logo redesign (removal) once initial public offering (IPO) completed

When needed, ITS uses external resources, typically on projects but occasionally on support functions. They usually come from one outside independent consulting firm (Accenture) or as independent consultants.

Besides applications development and support staff, the Business Solutions group also includes a quality assurance (QA) group. The QA Managers and QA analysts are involved with documentation and test plans, test scripts, assisting BUs, and defects tracking. ITS developers execute unit tests. QA's role is to guide, assist, and support testers throughout the testing process; however, the QA analysts do not actually perform QA testing. A User Acceptance Testing (UAT) group from the business unit that requested the change is actively involved in most other types of testing activities, as shown in *Exhibit IV-7*, often as the primary group responsible for such testing. Many business units believe that ITS should be more actively involved in testing.



Exhibit IV-7
Typical Testing Performed and Responsible Group
as of December 31, 2007

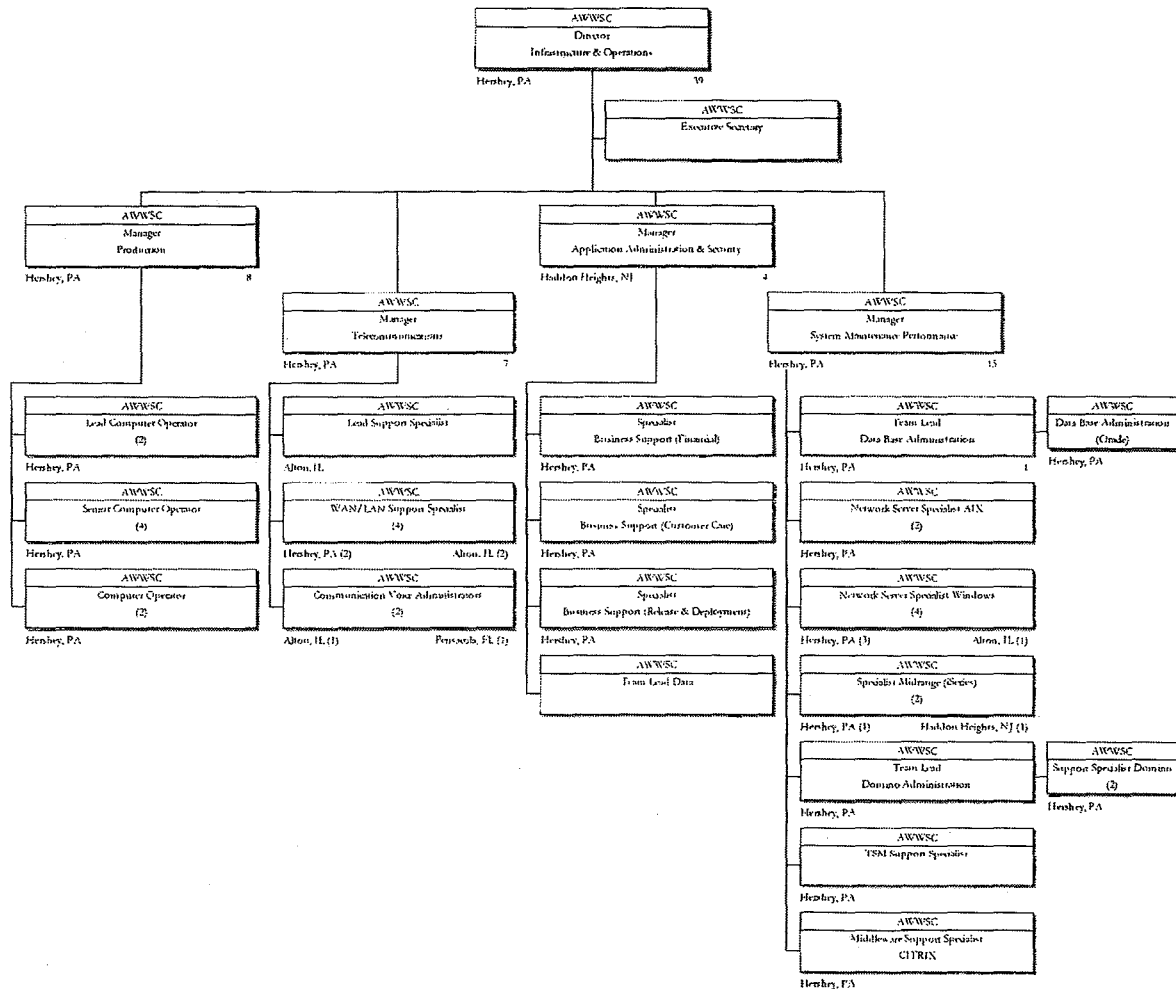
	Type of Testing	Primary Group Responsible	Brief Description of Testing
1	Unit testing	ITS developers or a designated agent	Implemented against the smallest testable element (unit) of the system. It involves the testing of internal structures of the requested change, such as logic and data flow and/or the unit's function and observable behaviors. Unit testing is required for all changes.
2	Functional testing	Business unit	Executed by the User Acceptance Testing (UAT) group based on the test plan and test cases. Functional testing is to be performed for all projects. It is conducted to ensure that each function, transaction, and feature works correctly as per documented business requirements.
3	System integration testing	Business unit	Executed by the UAT group, if applicable, based on the test plan and test cases. Integration testing is to be performed for any modification where the change spans over multiple functional areas or business processes. It is conducted to ensure that the downstream impact of transactions is fully validated.
4	User acceptance testing	Business unit	Executed by the UAT group based on the test plan and test cases. User acceptance testing is to be performed for all modifications. It is the execution of predefined business scenarios or test scripts, which combine various business processes or test cases. User acceptance testing can span multiple systems, applications, and manual processes in accordance with the expected results.
5	Regression testing	Business unit	Executed by the UAT group, if applicable, based on the test plan and test cases. Regression testing is to be performed if the change could potentially and unintentionally affect functions, processes, or data that this change is related to but was not designed to alter. It looks at potentially impacted processes and scenarios that did not change but must be tested to prove no negative impacts exist.
6	Performance testing	ITS Infrastructure & Operations	Executed by ITS Infrastructure & Operations with assistance from the UAT group, if applicable, based on the test plan. Performance testing is to be executed when the change may have adverse effect on the network, system, or application as a result of the solution's or related systems' unknown behaviors. Its goal is to eliminate performance bottlenecks and to ensure that the solution is performing according to specified expectations based on KPIs that are essential for a meaningful performance test.
7	Load testing	Various ITS groups	If applicable, based on the test plan, load testing is executed by the ITS team in cooperation with, and on behalf of, the UAT group. It is to be performed when automated data loading is performed. This test is performed to ensure the accuracy and timeliness of data load into production environment to meet a KPI-measured quality and time window required for data migration. QA is accountable for coordination, scheduling, and management of the load test. ITS employees are accountable for execution of programs in a timely and scheduled fashion. The UAT group is accountable for data validation and reconciliation.
8	Stress testing	ITS Infrastructure & Operations	If applicable, stress testing is executed by ITS Infrastructure & Operations with assistance from the UAT group. It is to be executed when the change may have adverse effect on the network, system, or application as a result of volume of data, number of users, access method, configuration of landscape or interfaces, etc. Stress testing is performed to determine the stability and performance of a system under full or exceeded load of transactions and users. It involves testing beyond normal operational capacity, often to a breaking point, to observe the applications, systems, or network behavior.

Source: Interview 62 and Information Response 614

Infrastructure & Operations

The ITS Infrastructure & Operations group is illustrated in *Exhibit IV-8*.

Exhibit IV-8
ITS Infrastructure & Operations Organization
as of December 31, 2007



Source: Information Response 257 and Company Comments

Each Infrastructure & Operations employee is supposed to have a development plan that includes success measures associated with development objectives and activities. *Exhibit IV-9* illustrates the Director's KPIs, from which success measures for other Infrastructure & Operations employees are



derived. The 2007 results, although not illustrated in *Exhibit IV-9*, indicate that the targets for these metrics are being "met" or "exceeded."

Exhibit IV-9
KPIs for the ITS Director of Infrastructure & Operations
as of December 31, 2007

KPI Description	KPI Formula	Weight	KPI Targets
Finance			
Manage operational spending within the budget established for respective area	Percentage of Q3 operating forecast underspending or overrun	20%	Exceeds: -3 % to 0% Meets: Over -3% to -5% Fail: Over 0% or over -5%
Manage capital spending within the budget established for respective area	Percentage of Q3 capital forecast underspending or overrun	10%	Exceeds: -5 % to 0% Meets: Over -5% to -10% Fail: Over 0% or over -10%
Customer			
Effective and timely support of IT initiatives (projects, enhancements, break fix, and maintenance)	Percentage of work orders not meeting completion deadlines	10%	Exceeds: < or = 3% Meets: > 3% or <= 5% Fails: > 5%
Quality support of day-to-day operations and IT initiatives (projects, enhancements, break-fix, and maintenance)	Percentage of initiatives achieving average ranking of 90 or above	10%	Exceeds: >=95% Meets: Between 85% and 95% Fails: Under 85%
Processes			
SOX compliance	SOX compliance; no major weaknesses	25%	Exceeds: Certified, no weaknesses Meets: Certified, minor weaknesses Fail: Failed, major weaknesses
Enhance operational integrity and excellence	Continued improvement in mega processes	10%	Exceeds: Significant improvement Meets: Acceptable improvements Fail: Insufficient improvements
Employee			
Timely and effective staffing	Achieve targeted vacancy % level by year end	10%	Exceeds: < or = 3 % Meets: > 3% and <= 5% Fail: > 5%
Development and training	Percentage of employees whose skill level increased as targeted in development plans	5%	Exceeds: >= 95% Meets: Between 85% and 95% Fail: 85% or less

Source: Information Responses 561 and 745

This group is composed of four subgroups:

- Within the *Production* group, batch-production runs occur every night for customer service (AS/400) and financial (AS/400) systems. Most systems now run in a client/server environment, although JD Edwards (JDE) and Lotus Notes still run on AS/400 equipment. Two data centers exist: one in Hershey (PA), the main facility, and the other in Haddon Heights (NJ), which is used for backup and disaster-recovery purposes. The Hershey data center is staffed (three shifts) on a five days/week x 24 hours/day basis; however, data-center computers are available on weekends as well as weekdays because the data center then operates in a lights-out (no-staffing) manner. If necessary, ITS staff can be called into the data center using a formal on-call list. A Hershey data center expansion project is being completed in response to

capacity-planning efforts. Other projects include identity access management (IAM), voice over Internet protocol (VoIP), Cisco IP, etc. American Water has various platforms, including Microsoft Exchange and Lotus Notes for voicemail purposes, but is moving toward Microsoft Exchange as its standard platform. It also uses Cisco firewalls with content filtering at two points of presence (POPs) (Hershey and Haddon Heights). ITS has focused on disaster recovery/restoration as part of key SOX "404" applications. E-mail archiving and data retention is also being discussed. This group shares responsibility with the Operations Risk Management (ORM) for firewalls between supervisory control and data acquisition (SCADA) and BU servers, because ITS staff manages the network; however, the group does not support SCADA servers and applications. Refer to *Error! Reference source not found.* for further discussion about Chapter 101 compliance with regard to cyber-security and disaster recovery plans and to *Chapter V – Water Operations* with regard to physical-security, business-continuity, and emergency-response plans.

- ◆ The *Telecommunications* group is responsible for both data and voice communications, although American Water is just now centralizing voice systems. American Water has various platforms across its system, including Cisco, Avaya, Siemens, AT&T, and Lucent. For those areas where Avaya PBX telephone systems exist, American Water is moving its telephone systems to Cisco IP, as systems are fully depreciated and contracts expire.
- ◆ The *Application Administration & Security Management* group has only recently been formed as part of American Water's SOX compliance efforts, largely to ensure segregation of duties. Its focus is evolving. One area of responsibility includes access management. To gain access to American Water's network and computer systems, a user access request (UAR) form (signed by a user's supervisor) must be submitted for approval. The form is sent to the Operational Risk Management (ORM) Security group and then to the respective AWWSC BU for approval, if the requested access is determined to be a highly sensitive entitlement. Another area of responsibility within this group includes the processes for release and deployment from a pre-production environment to a production environment. One of the projects in progress is an identity access-management project that is scheduled to be completed by end of year (EOY) 2007.
- ◆ The *Systems Maintenance & Performance* group is responsible for monitoring, maintenance, support, and administration of hardware, databases (not content), and Lotus Notes, including capacity planning. Various databases are used, including Oracle for Advantex (Service First), Hyperion, PowerPlant, Sabrix—although American Water also uses SQL, DB/400—and others. Key projects under way in late 2007 include:
 - Facility/infrastructure improvements
 - Upgrade central processing unit (CPU) of the production systems and development systems
 - Implement independent auxiliary storage pod (IASP) on production and development systems
 - Active directory (AD) security portion of the A/M project
 - Virtual machine (VM) pilot



Exhibit IV-10 illustrates other major Infrastructure & Operations initiatives that are either in progress or scheduled to be started.

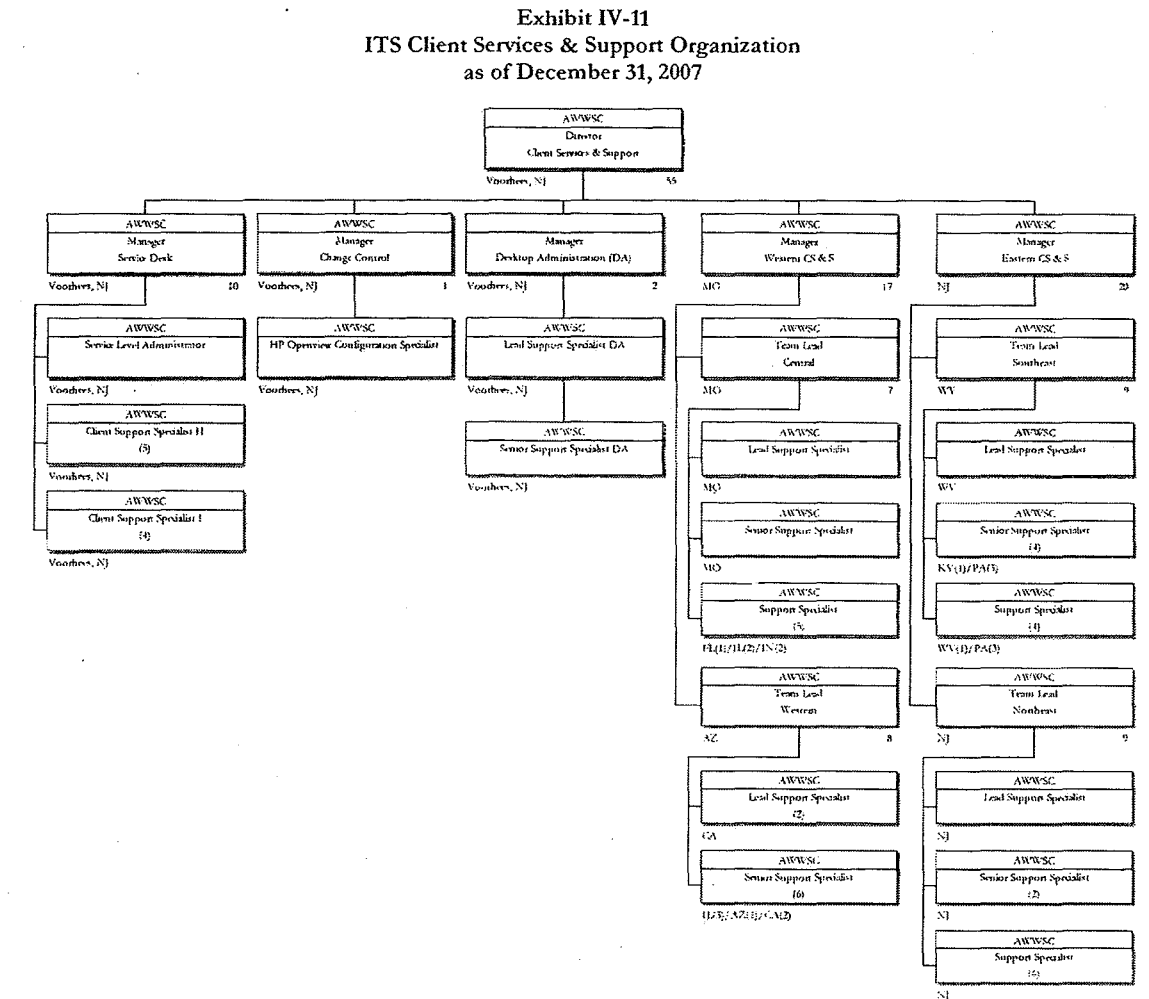
Exhibit IV-10
Major Infrastructure & Operations Initiatives
as of December 31, 2007

Due Date	Status	Impact	Title
End Before 6/31/08	In Progress	Medium	SQL Server Consolidation
End Before 8/31/08	In Progress	High	Oracle Server Consolidation
End Before 3/31/08	In Progress	High	SQL Server Secure Configuration Upgrade
End Before 3/31/08	In Progress	High	Oracle Server Secure Configuration Upgrade
End Before 3/31/08	In Progress	Medium	SQL Server Logging Automation
End Before 3/31/08	In Progress	Medium	Oracle Server Logging Automation
End Before 12/31/08	In Progress	Low	VM Ware Installation
End Before 3/31/08	In Progress	Medium	CITRIX Server Consolidation
End Before 12/31/08	In Progress	Medium	ES800 to DS8300 upgrade
End Before 12/31/08	Not Started	Medium	Physical Windows Server Consolidation

Source: Information Response 557

Client Services & Support

Exhibit IV-11 illustrates the ITS Client Services & Support (CS&S) organization.



Source: Information Response 257 and Company Comments

This group's key functions include:

- ◆ Site support (excludes Hershey data-center operations and support) for desktops/laptops, servers, and other network devices, including SCADA equipment but not software; fax equipment (located throughout American Water sites), which includes (but is not limited to) software deployment, troubleshooting, and monitoring at 81 PAWC sites for approximately 725 office personal computers (PCs), 143 tough books, and 60 SCADA PCs

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- ◆ IT change management (event and problem management), including moving of equipment and software into production
- ◆ Service (help) desk (7:00 a.m. to 7:00 p.m. Mondays through Fridays, with 7 days/week and 24 hours/day support via cellular telephone) for systems excluding SCADA; the help desk uses HP's OpenView Service Center software for tracking, monitoring, and reporting requests, in which Level 1 support is provided internally by help desk and Level 2 and 3 support by other ITS groups
- ◆ End-user training sessions
- ◆ Communications with user organization on support activities

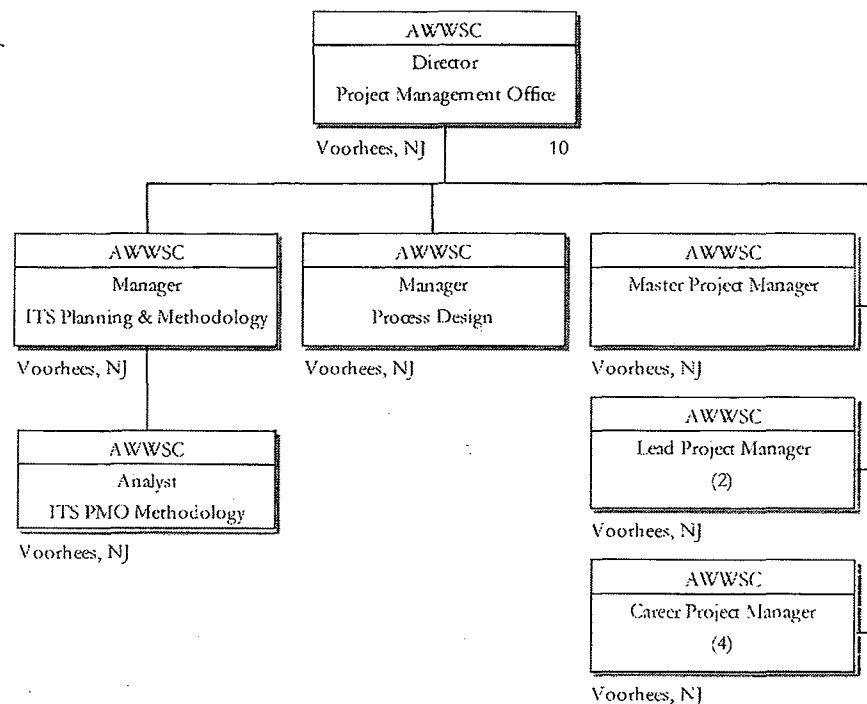
American Water has been attempting to standardize applications on desktop computers, and the Desktop Administration Manager estimated that the company has completed roughly 60% of this task at 2007 year-end. He is continually redeveloping the image; however, American Water has only one image with applications sitting on top of the core image. The desktop currently being imaged is based on Microsoft XP/Office 2003 and Lotus Notes. (Cost plus applications, such Microsoft Visio and Microsoft Project, are only installed when requested and approved by BU management.) American Water is evaluating when to go from Microsoft XP/Office 2003 to Microsoft Vista/Office 2007.

Additionally, CS&S management indicates that its 2008 focus will be to expand from a break/fix orientation to a more proactive stance whereby additional services are provided to its customers. Among the activities that management hopes to consider adding to this group's responsibilities include use of additional software-deployment capabilities, inclusion of SCADA calls to the service desk, server and workstation virtualization, working as a partner with BUs for planning purposes, as well as others.

Project Management Office

The ITS Project Management Office (PMO) organization is illustrated in *Exhibit IV-12*. At the time of Schumaker & Company's field work, the Director's position was filled by the Manager of ITS Planning & Methodology on an interim basis, as well as his own position.

Exhibit IV-12
ITS Project Management Office Organization
as of December 31, 2007



Source: Information Response 257

This group is responsible for managing technology projects and portfolios of projects. It also facilitates the IT Steering Committee (ITSC) process. For every major project, a VP is assigned as a business sponsor. A business lead is also assigned, along with technical lead(s). All leads report to the project manager who is assigned to this project from the PMO organization. The project manager reports to a Project Steering Committee (PSC), which is formed to approve design, testing, production, etc. The PSC includes the business sponsor as well as VPs from the areas impacted. Many of the project managers have a technology background, although some also come with a business background. The ITS organization has three project-manager levels, including:

- ♦ *Master* – has managed large projects from cradle to grave
- ♦ *Lead* – has managed small to medium projects, but not large projects



- ♦ *Career* – has managed small to medium projects; however, they are normally less complex projects than the Lead project-manager level

Other PMO groups include:

- ♦ *Planning & Methodology* – This group is responsible for ensuring that ITS' project-management methodology is followed on technology projects, monitoring committee activities, and mediating issues.
- ♦ *Process Design* – This group is responsible for effectively guiding and training BUs and the ITS organization through the design of business processes as technology projects are implemented. For example, the Process Design Manager mediates meetings to lead BUs in process design. That way, s/he can ensure that business requirements are met. Current projects include:
 - *Call center technology replacement project* – replacing Avaya solution, which is quite old; now looking at overall design as American Water is in the middle of evaluating options
 - *Upgrade of Service First project* – Advantex software package for scheduling and managing service orders was initially implemented approximately four years ago; upgrade under way aims to incorporate release and increase capacity

Each ITS project is governed by the following four phases:

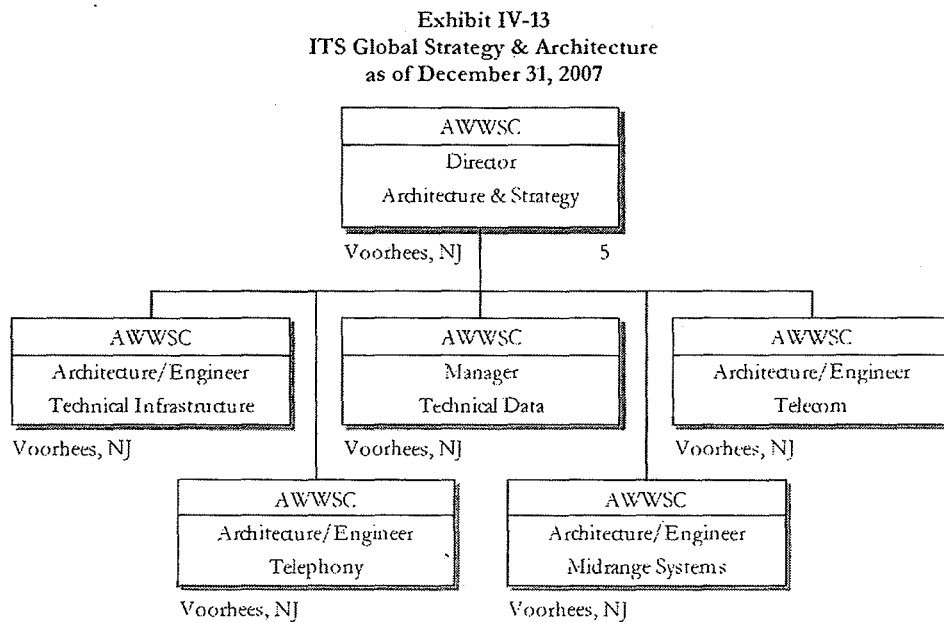
1. In the *Initiation Phase*, an idea for a project is developed into a full-blown business case.
2. During the *Planning Phase*, business and technical designs, along with the implementation approach and project plan, are documented.
3. The project team (Business and ITS) delivers the *Execute/Deliver Phase* via programming, configuration, and testing tasks, based on the requirements and specifications produced during the planning phase. The project manager oversees project delivery and reports to the business sponsor and project-steering team with regular status updates, scope change requests, project risks, and issues.
4. Projects are completed in the *Close Phase* where resources are released, accounting is closed, and lessons learned surveys are completed. All project knowledge, including any remaining open issues and risks, is transferred to ITS production support and the business sponsor.

American Water's project-management methodology, incorporating these four phases, is based on Deloitte's *PMO in a Box* methodology, which aligns closely with Project Management Institute's *Project Management Body of Knowledge* (PMBOK) and additional policies and procedures governed by SOX compliance. Supporting processes are used throughout the project lifecycle, including cost and financial management, resource allocation, project portfolio management, issue and risk management, management reporting, procurement management, benefits management, and scope change management.

Each week, the PMO Director meets with the project managers to discuss each of the projects that are under way and the status of each.

Global Strategy & Architecture

Exhibit IV-13 illustrates the ITS Global Strategy & Architecture organization, which was established in 2007.



Source: Information Response 257

The Director of Global Strategy & Architecture position has been vacant since September 2007 and one of the five positions (Architect/Engineer Midrange Systems) has not yet been filled. Although the CIO expected to fill all vacant positions by end of calendar year 2007, as of the middle of January 2008, they were still vacant.

This group's focus is to address pain points that have occurred because systems are not appropriately architected up front, including those architected correctly, not integrated in an appropriate manner, or not meeting ITS' strategic direction. To accomplish this aim, this group's existing objectives are to develop standards involving design and providing the last level of support for requests. In the autumn of 2007, the group was in the process of prioritizing standards and developing a high-priority list, as shown in *Exhibit IV-14*, which the Information Technical Review Board (ITRB) must approve. Although various ITS groups may be initially developing a standard, the Global Strategy & Architecture group is responsible for coordination of these standards.



Exhibit IV-14
High-Priority List of Standards
as of December 31, 2007

Group	Standard Name	Completion Date
Architecture	Data/Voice Wiring and Cabinet Standards	2007 (September)
	Network Router and Switch Hardware Standard	2007 (September)
	Telephone Models	2007 (October)
	Telephony and Voicemail Systems	2007 (November) (estimate)
	Wireless Standard	2008 (December) (estimate)
	Unified Communications Standard	2008 (December) (estimate)
	Call Center Telephony Standard	2008 (December) (estimate)
	Enterprise Directory Standard	2008 (December) (estimate)
	Wintel Server Standard	2008 (December) (estimate)
	Video Collaboration Standard	2008 (December) (estimate)
	Voice Network Standard	2008 (December) (estimate)
Business Solutions	Application Development Standards	2005 (December)
	Data Architecture Standards	2008 (December) (estimate)
	Web Development Standards	2008 (December) (estimate)
Project Management Office	Resource Management	2008 (December) (estimate)
	Project Prioritization	2008 (December) (estimate)
	Portfolio Management	2008 (December) (estimate)
	Dashboards/Metrics	2008 (December) (estimate)
Client Services & Support	Desktop Hardware	2008 (December) (estimate)
	Desktop Applications	2008 (December) (estimate)
	Desktop Imaging Standards	2008 (December) (estimate)
	Printers/Multifunctional Devices	2008 (December) (estimate)
	Mobil Devices	2008 (December) (estimate)
	Wireless/PDA Technologies	2008 (December) (estimate)
Infrastructure & Operations	Backup & Recovery	2008 (December) (estimate)
	Job Scheduler Access	2008 (December) (estimate)
	Job Submission, Execution, and Monitoring	2008 (December) (estimate)
	Tape Management	2008 (December) (estimate)

Source: Information Response 492

Of the 28 standards identified in *Exhibit IV-14*, only four had been completed at the end of Schumaker & Company's field work and most others were expected to be completed in 2008. A new group that finds itself without a leader for a long period of time will likely find it difficult to achieve its major objectives.

Planning & Performance

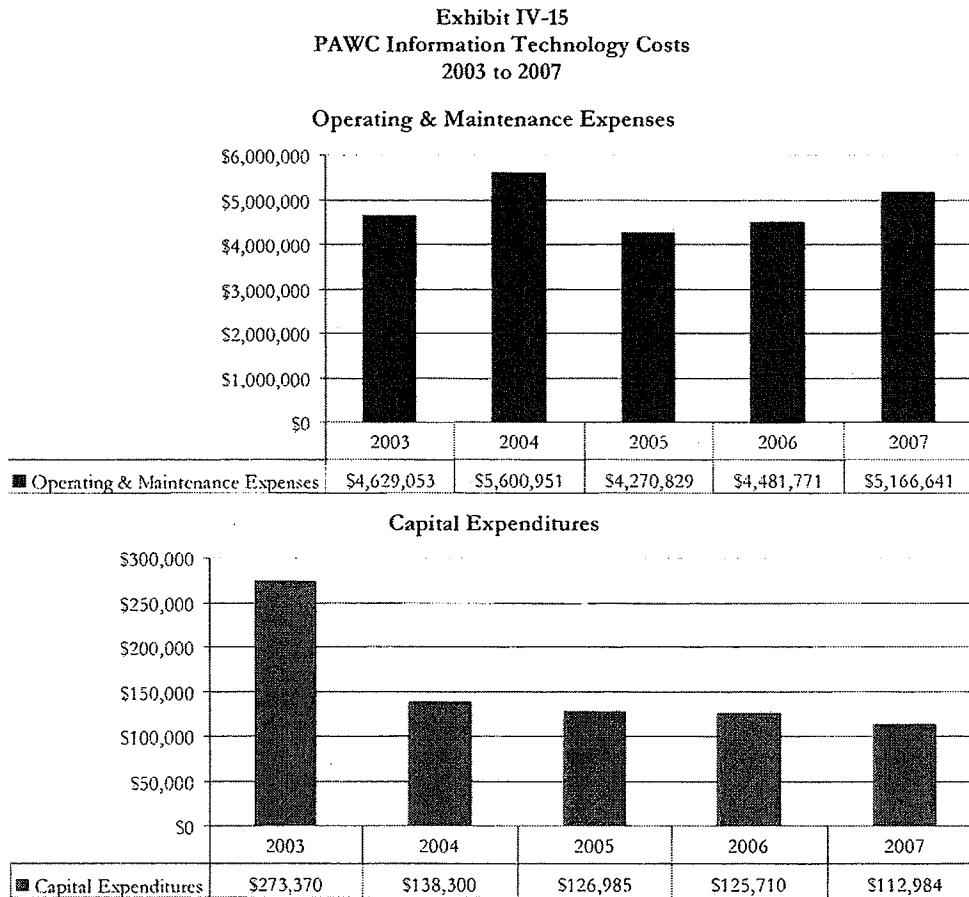
The Planning & Performance organization is composed of one person who is responsible for assisting the VP & CIO and IT's managers and directors with financial and service level management and reporting, including:

- ◆ Coordination of annual budget preparation for operations and maintenance (O&M) expenses and capital expenditures, monthly reforecasts of related financial data, and associated monthly variance analyses of actual data against budget and forecast levels
- ◆ Managing IT achieving monthly corporate financial deadlines, including
 - Submittal of variance report analyses and KPIs to AWWSC's planning organization
 - Participation in the "flash call" meeting with AWWSC's planning organization
 - Participation with the VP & CIO in the monthly business performance review meeting
- ◆ Coordination of monthly dashboard session reviews and creation of associated reports for reviews held monthly with IT's managers and directors
- ◆ Coordination of quarterly KPI reports of targets and results for IT organization where targets include:
 - Help desk first call resolution statistics
 - Actual versus budget financial data
 - Availability of data center
 - Availability of network
- ◆ Performing a sanity check of formulas used for IT allocation of costs by reviewing reports
- ◆ Helping IT's managers and directors promote quality in reporting by ensuring consistency (and removing consistency) in KPIs
- ◆ Performing special projects, as necessary



Expenditures

Exhibit IV-15 displays 2003 to 2007 information technology costs that have been charged to PAWC.



Source: Information Responses 68, 770, and 807

The ITS operating and capital budgets are developed for each AWWSC ITS organization, not at a state-specific level, which is typical of most service company functions. However, PAWC does have a technology-related capital budget managed by the AWWSC ITS organization. Prior to 2004, the ITS organization was not set up in the current structure and, as such, information is not readily available; therefore, AWWSC/PAWC was unable to provide equivalent 2003 capital expenditures. The ITS-related O&M expenses displayed are those amounts charged to PAWC on the AWWSC billing statements. American Water ITS purchases some services specifically for PAWC, including telephony, telecommunications, copiers, and maintenance/support. Other services purchased by the ITS organization benefit all American Water customers, including PAWC.

Backup/Recovery, Disaster Recovery, and Security/Protection

Backup/Recovery

Tape copies of the key business systems' data and applications are produced on a daily, weekly, and monthly cycle based on American Water's established recovery-point objectives. Backup activities are monitored daily and are validated for success/failure. Remediation steps are taken for any backups that have not been successful. Automated tools are used to monitor jobs and to report exceptions to technicians. Computer operator(s) monitor the system console for errors and failed jobs are rerun.

All critical data is in the Hershey data center. Its data is backed up daily at secured offsite facilities, which include a location in New Jersey for AS/400 data and a nearby Pennsylvania location (approximately two miles away) for client/server data.

Disaster Recovery

The ITS organization has disaster-recovery-plan documentation that describes the use of regular testing cycles. Example testing methods were illustrated in the plan, as shown in *Exhibit IV-16*, which was compiled by ITS management and adapted from *The Disaster Recovery Journal DR Glossary and Testing Methods* (Wold & Shriver, 1994).

Exhibit IV-16
Example Disaster-Recovery-Plan (DRP) Testing Cycle
as of December 31 2007

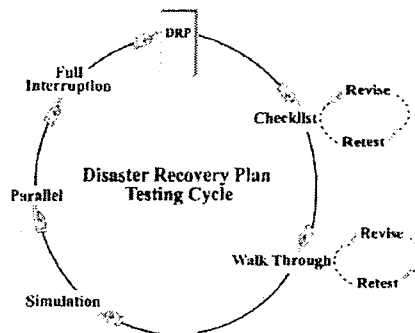


Figure 2. Illustration of a DRP Cycle Testing Scenario

Source: Information Response 637

The plan goes on to say that a test cycle should consist of a minimum of three phases, including a checklist, a walk through, and one of the advanced testing methods (simulation, parallel, and full interruption). Specifically, for the ITS organization, it indicates that the American Water testing frequency should include:



- ◆ Cluster data integrity (weekly)
- ◆ Walk through (quarterly)
- ◆ Random equipment failure (twice a year)
- ◆ Hershey data center failure (once a year)

According to ITS management, as part of its annual data-center failure test, all critical applications are to be restored according to a schedule, which is reviewed and approved by the appropriate business-function owner(s). Additionally, each business owner is to indicate if the test was a success. See *Finding IV-10* for further discussion of American Water's disaster recovery plan and testing activities.

Security/Protection

Among the various security and protection actions that the ITS organization takes include the following:

- ◆ *Network* – Perimeter firewalls are installed between the Internet and American Water's network to establish a secure environment for the company's computer and network resources.
- ◆ *Virus Protection* – All servers and personal computers use antivirus software and automated virus-scan policy management to safeguard the network and data. All computers are set up to receive regular virus updates from the antivirus system. Weekly reports are available to determine the status of engine and virus-definition files across American Water locations.
- ◆ *Logical Access* – All users access information systems through unique credentials, which include, but are not limited to, system account username and password pairs, strong authentication tokens, smart cards, or digital certificates. The monitoring of sensitive accounts, transactions, and data is also periodically done based on the sensitivity of the access or the risk level of the transactions.
- ◆ *Physical Access* – Only authorized individuals are permitted physical access to centralized ITS resources. The data centers and associated rooms have doors that close automatically and securely. Mechanical locking mechanisms have storeroom function and remain locked at all times. Access to the data-center areas is controlled through an electronic access-control system (using an access badge), with entry and exit doors alarmed. Only personnel with defined business needs are authorized to enter these controlled access areas. Individuals who need to enter only occasionally are either escorted, issued temporary badges, or granted temporary access with their access badge. Individuals no longer requiring access have their access revoked upon notification.
- ◆ *Fire/Water Protection of ITS Facilities* – Fire barriers within, above, and below the operations area plus fire alarms and overhead fire suppression systems are in place. Hand-operated extinguishers are also available and maintained per local fire and building codes. Rooms protected with an oxygen-displacing gas (Halon) as a fire-suppression system have doors that remain closed, and the protected areas comply with all local fire and building codes. (The Hershey data center is replacing its Halon system with FM200.) In addition, data centers and computer rooms are not located directly beneath sections of the facility that could become

water hazards, such as restrooms and kitchen areas.

- ◆ **Backup Power Supply** – Potential points of utility failure have been eliminated and backup measures (i.e., installation of an uninterruptible power supply) have been implemented. In case of a power failure, emergency battery-powered lighting is installed and procedures are in place to periodically check their operation.

Technology Audits

A total of 19 IT/IS-related audits have been performed in the last five years as shown in *Exhibit IV-17*. Although several were performed in 2003 through 2006, only two were performed in 2005 and 2006, and none occurred in 2007. Refer to *Chapter III – Financial Management* for a discussion of the decreasing number of audits performed by the AWWSC Internal Audit group.

Exhibit IV-17
IT/IS-Related Audits
2003 to 2007

Year	Description
2006	IS SCADA
2006	IS Service First Application
2005	IS AWWSC Operations Environment Review
2005	IS AWWSC Infrastructure Service Help Desk
2004	IS Operating Systems Review (Windows)
2004	IS Operating Systems Review (UNIX)
2004	IS Network Security
2004	IS Operating Systems Review (OS400)
2004	IS Data Center Review (Mt. Laurel)
2004	IS Data Center Review (Hershey)
2004	IS Data Center Review (Voorhees)
2004	IS Data Center Review (Belleville Lab)
2004	IS Data Center Review (Alton, Illinois)
2004	IS Change Management
2003	IS Data Center Review (Haddon Heights, NJ)
2003	IS PCI Data Center
2003	IS AWS PCI Standard Operating Procedures
2003	IS Business Continuity Planning
2003	IS AW Policy Review

Source: Information Response 615



Governance Processes

The governance processes include standards for planned and unplanned technology requests. According to ITS management, the documentation for these processes reflects a more restrictive environment, which ITS management believed was not working and, therefore, was recently changed. However, the documentation has not yet been adjusted to reflect these changes. Based on current practices, different levels of approval are required for approving all technology requests, depending on the type of request made.

For *planned* technology requests, business units make their requests via the following process:

- ◆ When interested in undertaking a technology project, a BU completes and submits a business opportunity form (BOF) (why, value, etc.) and a Technology Design Document – Level 1 (TDD L1) to the PMO for placement on the ITRB and ITSC agendas and distribution of the BOF to the ITSC. The ITRB reviews and provides feedback (suggested course corrections, standards requirements, technology roadmap requirements, etc.) regarding the TDD – L1 to ensure that the BOF presented to the ITSC represents a solution that is feasible and consistent with IT strategy before their consideration of the business value of the proposition. The ITSC is composed of the CFO, VPs, directors, and regional representatives, with the Director of Business Solutions as a non-voting member.
- ◆ The ITSC approves (or disapproves) the form (if a request is due to regulatory changes, then it is automatically done).
- ◆ If the ITSC approves the form, the PMO tracks business-case activities, which involves having the BU build a business case (also referred to as a Level 2 design), with ITS involved in estimating IT costs through the development of a Technology Design Document – Level 2 (TDD L2).
- ◆ The business case and TDD L2 are submitted to the ITRB, which is composed of ITS/Security directors who meet weekly to approve (or disapprove) the technical aspects of a project.
- ◆ Once the ITRB approves a business case, it goes back to the ITSC, which approves (or disapproves) the project. This approval process includes an endorsement of the capital budget, a project priority relative to other projects, and a scheduled start date. (If request involves enhancements, an ITSC subcommittee approves them.)
- ◆ ITS begins a project once the appropriate Regional Investment Management Committee (RIMC) (one for each of the four American Water regions and one for corporate, totaling five) releases the funds.
- ◆ The project is performed, in which a project manager, usually an ITS employee, heads the project team. (On large projects, both ITS and the BU generally have a project manager, with the ITS project manager acting as the overall project manager.) In 2007, ITS began having a Project Steering Committee (PSC), which is composed of high-level stakeholders, for all major

projects. The PSC meets monthly (or as needed) to provide oversight regarding the project's business design, scope, testing, and finally making the recommendation to go live.

- ◆ Ultimately, however, the Change Approval Board (CAB), which meets weekly, is responsible for approving the requests that can actually go live. The CAB is composed of the Change Manager, ITS directors, and a Security director. Before moving systems to production, sign-offs using the production authorization form are required.

For *unplanned non-emergency* (break/fix) requests, requests are reported to the help desk and handled by the appropriate ITS group as part of its maintenance and support activities. Historically, ITS prioritized these requests; however, they now go into a queue, which ITS leads monitor on a daily basis, but are handled based on the process owner's prioritization of these items.

For *unplanned emergency* requests (emergency is defined as a physical failure), requests are handled immediately but require a manager's approval, with a post-mortem done by the CAB.

The ITSC also approves the mix of how internal ITS resources should be split among break/fix, projects, enhancements, maintenance, and administration activities. The mix (approved as of December 31, 2007) is shown in *Exhibit IV-18*. Schumaker & Company did not identify any ITS mechanisms currently in place for ensuring that the approved mix is being followed.

Exhibit IV-18
Mix of ITS Resources Approved by ITSC
as of December 31, 2007

IT Area	Projects	Enhancements	Break/Fix	Maintenance	Administration
Global Strategy & Architecture	60%	10%	5%	5%	20%
Core Business Systems	29%	21%	15%	15%	20%
Client Relations	10%	8%	45%	17%	20%
Infrastructure & Operations	12%	10%	25%	33%	20%
PMO	80%	0%	0%	0%	20%
Security	10%	20%	15%	35%	20%

Source: Information Response 490

Because ITS has limited resources, when the ITSC approves a project for ITS to complete, ITS may decide to augment its resources (if within budget).



Findings & Conclusions

Finding IV-1 American Water's long-range IT planning activities have been on hold since SOX compliance efforts began in 2006 following RWE's December 2005 decision to divest of American Water.

At the time American Water was acquired by RWE in 2003, a major initiative was undertaken to integrate American Water processes and replace American Water applications with a single, common enterprise resources planning (ERP) solution. Also, work on legacy systems and applications were frozen. In December 2005, all IT initiatives were cancelled following RWE's decision to divest of American Water. Because all IT initiatives were cancelled, all long-range planning processes were put on hold when SOX compliance projects began in 2006. As a result, no long-range IT plan has existed since 2003 when American Water began its ERP initiative. In 2007 ITS started developing an infrastructure plan, but no applications plan is yet in progress. That is, no formal long-range plan exists. Only its five-year budget plan, similar to that of other American Water departments, and an 18-month project portfolio of both business-initiated and ITS infrastructure-related projects (developed based on business cases approved, ranked by the IT Steering Committee, and aligned based on rank and availability of the technology skills needed to execute the projects) exist.

Despite not having a formal plan, in late 2007 ITS management verbally stated that its general expectations for the next five years are to refresh and standardize the IT infrastructure, to optimize ITS processes, and to implement new technologies to improve performance and enable business solutions needed by business units to meet their goals and objectives. ITS management also verbally stated that in 2008 it expects to replace existing outdated data network and other telecom technologies, to standardize its desktop environment, to upgrade existing core-system servers, and to deploy new telephony systems at sites where one is deemed needed and feasible. Also, other ITS activities include the delivery of projects as they are approved by the IT Steering Committee. For example, among those already investigated through strategy sessions is a review of client/server technologies that would reduce costs and improve and/or increase services to American Water customers. No formal strategic plan was in effect in late 2007.

The lack of a formal strategic plan prevents the ITSC from using such as plan as a guideline for deciding whether to approve (or disprove) projects and ranking-approved projects. It also means that ITS management's expectations are simply that as opposed to a plan for identifying what activities ITS should actually be doing.

Finding IV-2 ITS has made little progress in recent years with regard to addressing the technology needs of American Water's business units, including those impacting PAWC operations.

All IT initiatives were cancelled in 2005 and it appears that little progress has been made since then to address American Water's technology needs. In late 2007, approximately 10 major IT projects were

under way, 30 business cases were started that might lead to major IT projects, and 13 major projects were backlogged. Additionally, examples of problems noted during this audit include:

- ◆ Dissatisfaction was expressed by various financial management groups due to lack of functionality in the current version of its financial enterprise resource planning (ERP) software, as discussed in *Chapter III – Financial Management*. This problem arose despite ITS' efforts to incorporate some enhancements.
- ◆ Software standardization across the American Water organization is lacking in selected instances. For example, although Schumaker & Company was told that American Water owns the inventory-management module of its ERP software, no Pennsylvania locations use the software. Instead, different inventory-management methodologies (manuals, spreadsheets, and Access databases) are in place in Pennsylvania, as discussed in the *Procurement Services and Materials Management* section of this chapter.
- ◆ Tools, such as 24x7 monitoring of failures, and analytical tools by the ITS help desk regarding types of issues so it can be more proactive in addressing customer needs are lacking.

Although it was beyond the scope of this audit to determine specifically why little progress has been made, some of the potential factors brought to light include the following:

- ◆ The lack of an IT strategic plan to guide the American Water organization in making project selection and prioritization decisions
- ◆ The use of governance processes involving BOFs/business cases, project selection and prioritization, project initiation, project monitoring, and project closeout that is certainly cumbersome thanks to the many steps and groups involved and is, possibly, ineffectively implemented
- ◆ The use of policies and procedures that focus primarily on SOX compliance rather than managing a well-run ITS organization
- ◆ Relying too heavily on BUs to perform major testing activities (not just user-acceptance tests, which is generally done by BUs, but also functional tests, system integration tests, and regression-test activities as shown in *Exhibit IV-8*), which can cause delays because BUs must also be performing day-to-day operations at the same time
- ◆ The vacancy of two key Director positions (PMO and Global Strategy & Architecture) for long periods of time
- ◆ Inappropriate, and in some cases inadequate, ITS staffing levels

A recent ITS study was performed by Computer Sciences Corporation (CSC) on behalf of American Water. This study compared the staffing levels of ITS groups against industry averages. The study results indicated that the organization may want to review what staffing levels each ITS group should have. Preliminary indications are that these levels may be higher or lower than what ITS has budgeted in the past for each group. That given, *Exhibit IV-19* illustrates that the number of positions previously



budgeted from 2005 to 2007 were not necessarily filled. According to ITS management, these vacancies were often attributable to hiring freezes.

Exhibit IV-19
Actual versus Budget ITS Staffing Levels
2004 to 2007

	Actual			Budget			Difference		
	2005	2006	2007	2005	2006	2007	2005	2006	2007
Business Solutions	39	45	56	57	57	61	(18)	(12)	(5)
Infrastructure & Operations	30	31	40	39	37	40	(9)	(6)	0
Client Services & Support	46	50	49	58	56	56	(12)	(6)	(7)
Project Management Office	11	9	10	8	11	11	3	(2)	(1)
Global Strategy & Architecture	0	5	4	5	5	6	(5)	0	(2)
Planning & Performance	1	1	1	1	1	1	0	0	0
Administration	1	1	2	1	1	2	0	0	0
Total ITS Organization	128	142	162	169	168	177	(41)	(26)	(15)

Source: Information Responses 67 and 765

Certainly, an investigation of what staffing levels should be needs to be performed.

Finding IV-3 The PMO has developed project-management documentation that is extensive in scope; however, materials to help employees effectively apply these standards has not yet been included as part of such documentation.

The PMO has made an excellent start in developing project-management documentation, which includes the following:

- ◆ PMO governance policy
- ◆ Project close practice
- ◆ Project initiation practice
- ◆ Project planning practice
- ◆ Project execute/deliver-analysis and design practice
- ◆ Project execute/deliver-build/configure/test practice
- ◆ Project execute/deliver-deploy practice
- ◆ PMO standards
- ◆ PMO guidebook

Most topics that Schumaker & Company would expect to see in project-management documentation for monitoring, measuring, and verifying steps that are designed to monitor progress against plan are generally included. Other materials often included in such documentation for programs, such as

checklists and templates to effectively apply these practices, were not noted in our review of the documentation.

Finding IV-4 The ITS organization is not placing adequate emphasis on certain staff's achievement and maintenance of project-management certifications.

According to senior ITS management, all project managers (who are located in the PMO organization) are required to have Project Management Institute (PMI) certification as Project Management Professionals (PMPs). In our review of certifications, only four (Director, Senior Analyst, one Lead Project Manager, and one Career Project Manager) of the 11 PMO employees had achieved PMP certification, although one other employee (a Lead Project Manager) was working toward such certification. Conversely, QA staff (who are located in the Business Solutions organization) are not encouraged to have PMP certification, although quality assurance is a key component of good project-management principles. Schumaker & Company also believes that other ITS staff, such as technical staff who are involved in project activities, should be encouraged to get their PMP certification, regardless of where they reside within the ITS organization.

Encouraging employees to obtain project-management certifications helps both American Water and its employees by increasing those employees' skill sets to more effectively perform IT work.

Finding IV-5 The ability of the Client Services & Support group to electronically deploy software upgrades to workstations is hindered by American Water's network, which results in additional costs to ITS customers, such as PAWC.

The Client Services & Support group has the necessary software to electronically deploy software upgrades to workstations, but CS&S management indicates that it cannot use this software. That is because the network does not have the necessary bandwidth to do so efficiently. The result is that CS&S employees must physically go to workstations to deploy software or software upgrades after a workstation has been originally configured for use. In some cases, CS&S employees must drive to a location to deploy software upgrades. For PAWC, this travel could take as much as four hours one way. The Client Services & Support group has attempted to minimize this manual effort by first putting a universal image on all workstations at the time of acquisition and then making few software upgrades until the equipment is replaced.

Finding IV-6 ITS management is not appropriately focusing its employee-training and development efforts through the use of a skills inventory for individual employees.

According to ITS management, ITS employees attend conferences and belong to professional organizations. In addition, employees are encouraged to participate in the following training and development (T&D) activities:



- ◆ NORDICS exchange group activities
- ◆ Gartner Group symposiums
- ◆ Vendor sessions (e.g., Cisco, AT&T, IBM, Microsoft)
- ◆ Common user groups (IBM, AS/400)
- ◆ Microsoft certifications
- ◆ Teleconferences
- ◆ ITS Information Day (focused on serving BUs better)
- ◆ Lunch & learn sessions
- ◆ White papers

Training and development (T&D) activities are performed based on the development needs that are identified mid-year and end of year at performing planning time. They are based on individual needs as opposed to group needs. It is up to individual managers to determine what is needed, because no tracking tools are available to them. Although American Water had already exhausted its Global Knowledge contract by the autumn of 2007, the CIO was looking to expand it. According to ITS management, as long as a manager has a training budget, s/he can use Global Knowledge.

Nevertheless, individual managers have neither a formal skills inventory nor a T&D history available to them to make decisions regarding how, when, and where to send employees for T&D activities. Also, the recent CSC study of the ITS organization indicated that development plans are not in place for all ITS employees as required by ITS policy.

Finding IV-7 The ITS organization does not have sufficient client-satisfaction information and data with which to evaluate its ability to serve AWWSC or PAWC departments.

The ITS organization does not routinely perform client-satisfaction surveys. Any information it has is obtained either through the use of a "lessons learned" activity, which is performed at the end of some (but not all) projects, or informally through discussions with BUs. Some individuals who were interviewed as part of this audit noted anecdotally that they had concerns about ITS' ability to adequately provide service.

Finding IV-8 The ITS organization has not developed service-level agreements with its client groups.

Although ITS' mission includes the organization being "a valued business partner," no service-level agreements with client groups, either functionally oriented AWWSC groups or state entities (like PAWC), currently exist. The targets associated with ITS performance statistics, as shown in *Exhibit IV-20*, were the only documentation provided by ITS management when asked to provide service-level agreements (SLAs). Although written and signed, Schumaker & Company does not consider these documents to be service-level agreements. They are merely ITS targets. According to ITS management, the organization has not met with BUs to determine what business units expect from

the ITS organization. Without having a good understanding of BU expectations, the ITS organization cannot truly have a client focus. It is therefore unable to appropriately provide the services that BUs (such as PAWC) require to meet the needs of their end customers.

Finding IV-9 ITS' performance versus its targets show varying, and in some cases, poor results.

Exhibit IV-20 illustrates ITS' performance metrics for the last three years, from 2005 through the first half of 2007.

Exhibit IV-20
ITS Performance Metrics
2005 to 2007 (through First Half of 2007 Only)

Service Desk											
Metric	Target	1Q05	2Q05	3Q05	4Q05	1Q06	2Q06	3Q06	4Q06	1Q07	2Q07
First Call Resolution Rate	60.00%	43.0%	54.0%	60.2%	60.7%	57.1%	51.6%	63.5%	73.0%	73.5%	76.0%
Telephone Answer Rate	70.00%	89.5%	80.0%	82.5%	77.6%	(a)	(a)	78.6%	82.9%	87.0%	89.0%
Telephone Abandon Rate	5.00%	1.9%	2.2%	2.8%	4.8%	(a)	(a)	5.7%	4.1%	3.0%	5.0%
(a) Upgraded the phone system and the switch reporting not available											
ITS Infrastructure Availability											
Metric	Target	1Q05	2Q05	3Q05	4Q05	1Q06	2Q06	3Q06	4Q06	1Q07	2Q07
Availability-Enterprise Servers	99.50%	99.6%	99.4%	99.5%	100.0%	99.8%	100.0%	100.0%	100.0%	100.0%	100.0%
Availability-Network Connectivity	99.95%	100.0%	99.9%	100.0%	100.0%	100.0%	99.9%	99.9%	100.0%	100.0%	100.0%
Governance & Alignment of Projects											
Metric	Target	1Q05	2Q05	3Q05	4Q05	1Q06	2Q06	3Q06	4Q06	1Q07	2Q07
Governance of ITS Projects(a)	95.00%	75.0%	79.0%	74.0%	100.0%	100.0%	100.0%	80.0%	90.0%	79.0%	92.0%
Alignment of ITS Projects (b)	100.00%	100.0%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1Q 05/2Q 05: Just implemented IT Governance tool to support the PMO process; 3Q 05: Spent the 3rd quarter completing the PMO processes and training; 4Q 06: Several projects need to improve their compliance with the PMO methodology; 1Q 07: 3 projects out of 14 did not comply with all PMO methodology, specifically PowerPlant, Hyperion, Daylight Saving projects.											
3Q 06/4Q 06 Project list and priorities set by the ITS Steering Committee.											
# of Work Order (WO) Legacy Requests											
Metric	Target	1Q05	2Q05	3Q05	4Q05	1Q06	2Q06	3Q06	4Q06	1Q07	2Q07
Legacy Application WO Requests	Consistent Reduction Trend	2126	1970	1907	1814	2332	2220	2573	2421	2159	1589
Core Business Systems Turn-Around-Time (TAT) for Emergency/Critical Issues and UARs											
Metric	Target	1Q05	2Q05	3Q05	4Q05	1Q06	2Q06	3Q06	4Q06	1Q07	2Q07
TAT-Priority 1 (Emergency)	95.00%				100.0%		66.7%	100.0%	100.0%		
TAT-Priority 2 (Critical)	95.00%	100.0%	100.0%	100.0%		100.0%				100.0%	100.0%
TAT-Average	90.00%	69.5%	82.4%	82.0%	76.6%	85.9%	87.2%	87.1%	91.2%	89.3%	90.6%

Highlighted areas indicate not making target

Data represents all American Water clients and none is classified as PA-specific.

Source: Information Responses 76 and 560



As shown by the highlighted items in *Exhibit IV-20*, many of these metrics have experienced time periods of poor performance. Those items where problems continue to occur in recent months include governance of ITS projects (% of ITS capital projects that follow the PMO methodology) and TAT average (average TAT for completing a user access request).

Additionally, approximately three years ago, ITS began formally doing KPIs for ITS managers, which are supposed to support business process improvements. (See *Exhibit IV-6* and *Exhibit IV-9* for examples.) These examples show that director KPIs are not aligned with the formal ITS metrics shown in *Exhibit IV-20*. We also noted that performance targets for the Client Services & Support organization include items focused on quality, budget variance, and two TAT metrics that are not included in *Exhibit IV-20*.

The ITS organization has a limited number of performance targets that have not recently been examined for relevance to what is expected of a well-managed ITS organization, and may have been the same for the last three years, from 2005 to 2007. These targets are also often not aligned with the KPIs of the various directors. Unlike many technology organizations, ITS has not focused on developing a group of metrics (or scorecard) that concentrates on the appropriate issues and then keeping ITS management's attention on achieving these targets.

Finding IV-10 Although ITS backup/restoration and security/protection plans and activities are generally reasonable, its disaster recovery plan is inadequate and appropriate testing activities are not being performed, despite its recent Chapter 101 self-certification reports that PAWC has met all required elements.

Each year since 2005, PAWC has been required to provide self-certification forms to the Pennsylvania Public Utility Commission (PaPUC) regarding its emergency preparedness, as required by 52 Pa. Code §§ 101.1-101.7. Subsequently, concurrent with its PaPUC annual report filing, PAWC submits its self-certification filing, in which PAWC must indicate that the requirements were met for the entire prior year (e.g., submitted in early 2006, for 2005). The regulation requires a jurisdictional utility to develop and maintain written physical and cyber-security, emergency-response, and business-continuity plans, which include:

1. A physical security plan must, at a minimum, include specific features of a mission-critical equipment or facility-protection program and company procedures to follow based upon changing threat conditions or situations.
2. A cyber-security plan must, at a minimum, include:
 - a. Critical functions requiring automated processing
 - b. Appropriate backup for application software and data; appropriate backup may include having a separate, distinct storage media for data or a different physical location for application software

- c. Alternative methods for meeting critical functional responsibilities in the absence of information technology capabilities
- d. A recognition of the critical time period for each information system before the utility could no longer continue to operate
- 3. A business-continuity plan must, at a minimum, include:
 - a. Guidance on the system restoration for emergencies, disasters, and mobilization
 - b. Establishment of a comprehensive process that addresses business recovery, business resumption, and contingency planning
- 4. An emergency-response plan must, at a minimum, include:
 - a. Identification and assessment of the problem
 - b. Mitigation of the problem in a coordinated, timely, and effective manner
 - c. Notification of the appropriate emergency services and emergency-preparedness support agencies and organizations

(Refer to *Chapter V – Water Operations* for discussion of PAWC's physical-security plan, business-continuity plan, and emergency-response plan.)

For 2005, PAWC submitted self-certification forms indicating that it essentially met all such requirements, with some emergency-response plans to be reviewed and updated, as appropriate, in early 2006. Then, for 2006 and 2007, PAWC submitted self-certification reports indicating that it met all such requirements. However, as discussed below, disaster recovery plans are inadequate and testing activities are not being performed.

The following applications and data are replicated between the IBM 890 servers in the Hershey data center and the IBM 830 servers in the Haddon Heights data center:

- ♦ JDE, including all JDE application modules and data
- ♦ E-CIS/Orcom, including all application and individual states' data

However, this replication does not represent an adequate disaster recovery solution. If a disaster occurs, American Water has essentially a "spare" application set and respective data, but is not in a state to recover within the 12 hours included in its plan, as follows:

- ♦ The IBM 890 integrated file system (IFS) share daily electronic funds transfer (EFT) data, which allows for customer billing and collections, was not being replicated between Hershey and Haddon Heights.
- ♦ The client configurations for JDE and E-CIS (as well as Hyperion) were only configured to access Hershey. Individual configuration changes for each client are required to point to



Haddon Heights in the event of a disaster, which would inhibit client processing until such configuration changes are made.

- ◆ In addition, restoration from tape has not taken place in production, but only in a development or test environment.

Additionally, American Water has not mimicked, or replicated applications in Haddon Heights or any other location, for the following key applications:

- ◆ Service First (mobile work management system) for customer work order dispatch to the field
- ◆ Hyperion System 9 (financial reporting)
- ◆ PowerPlan Suite, including PowerPlant (capital asset management) and PowerTax
- ◆ Sabrix (sales and use tax)

Although American Water backs up the data each day for these applications, should there be a disaster in Hershey, Haddon Heights is not prepared to support these applications

Furthermore, the disaster recovery plan in place is insufficient and has never been tested, which was supported by our requests for a description of disaster-recovery tests performed by the ITS organization in recent years and for copies of any resultant documentation from the last test performed. No such evidence of tests actually being adequately performed could be provided.

Schumaker & Company also noted that the two-mile separation in Pennsylvania from the Hershey data center to the backup site for client/server data is substantially less than the 10-mile minimum often considered a best practice for minimizing the likelihood both facilities would be impacted by the same event.

Finding IV-11 The IT security function is not part of the ITS organization, which is atypical of industry practices.

The ITS organization does not have responsibility for the information systems' security function. That function is handled by a five-person IT-security staff reporting to the Director of Information Security. This director in turn reports to the Director of Operational Risk Management, as discussed in the *Risk Management* section of this chapter. Typically, technology organizations include the information systems' security function (not part of an operations function but reporting to the CIO), which allows appropriate coordination between the security and operations functions. In addition, the recent CSC study of the ITS organization indicates that the current split has not been working effectively.

Finding IV-12 The data center space has recently been expanded in large part as a result of American Water not effectively performing a consolidation of its servers.

Capacity planning is not performed by the ITS Infrastructure & Operations group on an ongoing basis. Instead, annual capacity planning is performed by reviewing trends in data growth, including individual

groups that are responsible for data. Each year, coinciding with the budgeting cycle, the ITS organization performs capacity planning based on historical growth and the impact of projects in the portfolio. Based on that assessment, the organization identifies upgrades and expansions that are needed to meet required capacity and performance. It then collaborates with the AWWSC Business Development Committee to perform capacity and integration planning.

A Hershey data center expansion project was being completed in late 2007 in response to these capacity-planning efforts. This project included six components, including street power, power switch room, UPS, heating/venting/air conditioning (HVAC) units, fire protection, and refitting of space to house new computer and direct access storage device (DASD) systems. The costs associated with the expansion project were approximately \$942,500. To the extent that these costs are not merely upgrades, but truly expansion for computer/DASD systems, these costs should be considered lost savings.

American Water management believes that refitting of the existing data center space to house equipment is an opportunity to prepare for the future growth plans and to facilitate any migration from legacy systems/platforms. However, expanding a data center in today's environment is contrary to what most IT organizations experience. Most, in fact, have extra space, often due to aggressive server consolidation programs. To date, the ITS Infrastructure & Operations group has not formally undertaken such a program.

At the same time, other considerations, such as more aggressively archiving data rather than keeping all data online (also mentioned in the recent CSC study), should be factored into the analysis.

Recommendations

Recommendation IV-1 Expedite efforts to develop a long-range IT plan, and subsequently perform yearly review and update activities. (Refer to Finding IV-1 and Finding IV-2.)

The ITS organization has been without a long-range IT since RWE acquired American Water in 2003 and the ITS organization began its ERP initiative (since cancelled). The organization must expedite efforts to have such a plan developed in 2008. Then, each subsequent year, ITS and BUs should review (and potentially update) the IT plan together to ensure that it meets not just ITS' needs, but also those of the BUs that it serves.



Recommendation IV-2 Update ITS documentation as part of an ongoing program to include all aspects of a well-managed technology organization, including (but not limited to) operational, governance, and project management/QA functions. (Refer to Finding IV-2 and Finding IV-3.)

Much of the documentation developed by ITS to date has been focused on achieving SOX compliance. This limited view is not appropriate. The ITS organization needs to identify all required processes within it, including (but not limited to) operational, governance, and project management/QA functions. Then, it should establish a program for routinely reviewing and updating these processes and for developing (or updating) the process documentation as well as standards for associated procedures and practices. All documentation should be reviewed at least annually.

As part of these efforts, the ITS organization should make sure that checklists and templates are included in such documentation.

Recommendation IV-3 Address organizational issues involving vacancy of director positions, the appropriateness of staffing size of the various ITS groups, and the reporting location of the information systems' security function within American Water's organization structure. (Refer to Finding IV-2 and Finding IV-11.)

At least three different types of ITS organizational issues were identified by Schumaker & Company in performing this audit. They include:

- ◆ The ITS organization must move quickly to fill the Director PMO and Director Global Strategy & Architecture positions. These groups cannot operate effectively without leadership to guide employees.
- ◆ A detailed analysis of the appropriate staffing size of the various ITS groups should be performed and reflected in ITS plans and budgets.
- ◆ The information systems' security function should be removed from the Operational Risk Management organization and moved into the ITS organization, although it should not be part of the Infrastructure & Operations organization.

The ITS organization must address each of these issues in the short-term so it can proceed with its plans as necessary.

Recommendation IV-4 **Expand American Water's commitment to project-management principles by requiring all ITS employees who are actively involved in project work to achieve PMP certification and by closely monitoring related activities to ensure that timely progress is made. (Refer to Finding IV-4.)**

For an organization with the size and complexity of American Water's ITS organization, few employees have project-management certifications. Certification not only helps to ensure that individuals have been trained in appropriate project-management practices, tools, and techniques, but it also helps to place appropriate emphasis by American Water management on the importance of best practices with regard to project management. Emphasis on project-management certification helps to ensure standardization of project-management implementation efforts. It also helps in determining which employees are truly interested in furthering their positions within the ITS organization by obtaining their PMP certification. Inclusion of project-management certification goals should be incorporated into the performance plans of appropriate employees. Those employees who are required to achieve PMP certification should include PMO staff, QA staff, and other ITS employees who are actively involved in project work, even if they do not hold project manager/QA titles. That is because they too need to understand project-management philosophies, concepts, techniques, and tools.

In addition to PMP certification, as part of its program to foster project-management principles, American Water should also ensure that skill-based mentoring and exposure to a variety of on-the-job development experiences is included in this program.

Recommendation IV-5 **Enhance the American Water network to enable electronic deployment of software updates to PAWC employees. (Refer to Finding IV-5.)**

Given that the CS&S group has the technology in place to electronically deploy software upgrades, this group should work closely with the Infrastructure & Operations group to develop the necessary steps to make deployment feasible. It should then implement these steps as quickly as possible. Every AWWSC manual deployment of software costs PAWC approximately \$100,000 more than doing deployments electronically. Achievable cost savings could approximate \$100,000 to \$200,000 in annual savings, depending on the number of times deployment occurs each year. If done annually, it could approximate \$100,000; if done semi-annually, it could approximate \$200,000; or if done quarterly, it could approximate \$400,000.

Recommendation IV-6 **Improve training and development efforts for ITS employees. (Refer to Finding IV-6)**

The ITS organizations should implement a skills inventory database for ITS employees that tracks professional development activities undertaken by ITS employees and associated management and technical skills held by these employees. This information could then be used by ITS management to



identify training and development activities necessary to improve the skills of ITS employees. The ITS management must ensure that all ITS employees have a development plan that incorporates professional development objectives.

Recommendation IV-7 Develop a plan to regularly conduct ITS client-satisfaction surveys and implement the first survey in a timely manner. (Refer to Finding IV-7.)

The use of regularly conducted client-satisfaction surveys can provide a technology organization with insightful information about the services it provides and how client groups perceive the organization. The use of such surveys is particularly helpful when looking at trends over time to determine whether service is improving or not.

It is the perfect time for the ITS organization to develop a plan to conduct client-satisfaction surveys. That is because a new CIO began work in the beginning of 2008. The use of such surveys would give the CIO a baseline from which to show progress as the CIO makes changes. The first survey should be done in a timely manner. Subsequent surveys should be routinely conducted. Many technology organizations conduct such surveys every one to two years.

Recommendation IV-8 Establish ITS service-level agreements with major client groups. (Refer to Finding IV-8.)

To truly become "a valued business partner," the ITS organization must increase its client focus by interacting more frequently and effectively with its client groups. One of the ways the ITS organization can begin is by establishing service-level agreements with each of its major client groups, both functionally oriented groups and state entities. However, these agreements must not be developed and solely placed on a back shelf without further consideration. A mechanism must be developed that requires the ITS organization to at least quarterly (if not monthly) provide feedback to the client groups as to how the ITS organization is doing against the expectations included in the SLAs.

Recommendation IV-9 Implement a relevant ITS scorecard. (Refer to Finding IV-9.)

The existing ITS performance targets are outdated and do not reflect an organized approach to effectively improving the ITS organization's performance. ITS management, in conjunction with BUs, should determine what key metrics are relevant and should then identify the particular targets against which results are measured. The KPIs for directors, as well as any success measures for individual ITS employees, should be aligned so that they support the key ITS performance targets included in an ITS scorecard. Similarly, these key ITS performance targets should support the IT strategic plan (described earlier in *Recommendation IV-1*).

Routinely (preferably monthly), scorecard results against targets, with explanations when targets are not achieved, should be published to all ITS employees and major business partners. In the future, when a

target is not achieved, a formal action plan should be developed and a responsible person assigned to improve results and subsequently achieve the target.

Recommendation IV-10 **Update the ITS disaster recovery plan and begin routinely reviewing and testing disaster-recovery plans and documenting results. (Refer to Finding IV-10.)**

The ITS organization should update its disaster recovery plan to address the shortcomings previously discussed. Among the actions that should be taken are:

- ◆ Begin replicating IFS between Hershey and Haddon Heights.
- ◆ Transition the tape management processes to a third-party for seven day a week collection at all sites and transfer to off-site storage and maintenance (at least 10 miles away) by the third party.
- ◆ Address the client configuration challenges for all American Water applications to be able to point to Haddon Heights instead of Hershey in the event that the need arises
- ◆ Establish recovery time objectives and recovery point objectives with line of business owners for all critical applications
- ◆ Adequately address all elements of the disaster recovery plan document and update it.
- ◆ Develop a plan (and routinely review it) to immediately do full disaster recovery testing for JDE and E-CIS applications.
- ◆ Develop a plan (and routinely review it) to put in place a disaster recovery solution (including replicated applications and data for the other business critical applications listed below:
 - Service First
 - Hyperion System 9
 - PowerPlan Suite
 - Sabrix

Furthermore, as the ITS organization has not reviewed and tested its plans and documented results, disaster recovery test activities should be routinely performed. The way a technology organization learns to quickly and efficiently restore its underlying technology, systems, and applications is by performing routine tests to bring up all core applications. As change occurs frequently within a technology environment, most well-run ITS organizations review checklists and perform walk throughs throughout each year. They also should replicate, at least annually, the situation where all core applications are operated from an alternative site than they normally are. Key representatives from major customer groups should be involved in approving that these applications are working as expected. The documentation of test results is important for the ITS organization to improve results the next time a test is attempted.

Besides improving its testing activities and documenting testing results, the ITS organization must regularly review its disaster-recovery plan and update it, as appropriate.



The disaster-recovery actions should be in alignment with American Water's business-continuity-plan (BCP) activities. (See *Chapter V – Water Operations* for a discussion of PAWC's BCP activities.)

Recommendation IV-11 Perform a server consolidation study and implement study recommendations. (Refer to Finding IV-12.)

Many ITS organizations have performed server-consolidation studies. That is because server consolidation is an approach to the efficient usage of computer-server resources so as to reduce the total number of servers an organization requires. Use of server consolidation typically occurs in response to server sprawl, a situation in which multiple under-utilized servers take up more space and consume more resources than can be justified by their workload. Therefore, many organizations are increasingly turning to server consolidation as a means of cutting unnecessary costs and of maximizing return on investment (ROI) in a data center. Of 518 respondents in a Gartner Group research study, 6% had conducted a server-consolidation project, 61% were currently conducting one, and 28% were planning to do so in the immediate future.

Although consolidation can substantially increase the efficient use of server resources, it may also result in complex configurations of data, applications, and servers that can be confusing for the average user to contend with. To alleviate this problem, server virtualization may be used to mask the details of server resources from users while optimizing resource sharing. Another approach to server consolidation is the use of blade servers to maximize the efficient use of space.

Given its recent increase in data-center space and the direction that many technology organizations are going to address server sprawl, the AWWSC ITS organization should undertake a server-consolidation study that factors in increased archiving of data. Based on the results, the ITS organization should implement any study recommendations in a timely manner. Ultimately it is not simply less space that could result in cost savings to American Water, but more significantly it is the use of fewer servers with increased archiving of data, plus associated support costs, that would provide the vast amount of potential savings. Based on a combination of these changes, the potential cost savings and/or cost avoidance to American Water could be approximately \$1 million to \$1.2 million annually. Based on PAWC receiving approximately 22.3%, PAWC's range would be approximately \$223,000 to \$267,600 in annual cost savings and/or cost avoidance.

B. Transportation and Fleet Management

This chapter provides a discussion of transportation and fleet management services provided by either American Water Works Service Company (AWWSC) or Pennsylvania-American Water Company (PAWC) in relation to the maintenance and operation of the vehicular fleet that is operated by PAWC.

Background & Perspective

Organization & Staffing

The majority of the fleet management function for both PAWC and all of the other American Water state-operating companies is provided by an external contractor, Automotive Resources International (ARI), which is headquartered in Mount Laurel, NJ. As such, the internal organization for fleet management at PAWC and AWWSC is very small, with only two full-time fleet management personnel at AWWSC and one AWWSC Southeast Region employee who handle the fleet management function on a part-time basis.

The Fleet Manager at AWWSC reports to the Director of Supply Chain for AWWSC. The AWWSC Fleet Manager is located in Voorhees, NJ. He is responsible for fleet management policies, procedures, procurement, vendor selection, and approval of large maintenance expenses. The AWWSC Fleet Manager's primary responsibility is to ensure operating company compliance with the American Water Fleet Governance Document and with other relevant American Water policies and procedures for fleet management. These documents specify the guiding fleet maintenance standards such as how often to replace, maintenance, etc., company vehicles. The Fleet Governance Document is composed of several documents, including the following:

- ◆ *Vehicle Utilization Policy* – governs the administration of the American Water vehicle-use plan
- ◆ *American Water Fleet Program/Program Governance* – primarily guides the interaction with the contracted fleet management company, ARI, including vehicle acquisition and maintenance guidelines
- ◆ *Bridgestone/Firestone Instructions* – sets forth the procedures for purchasing tires from the preferred tire vendor
- ◆ *Vehicle Replacement Policy* – intended to insure the vehicles that are operated are safe and reliable, while also attempting to optimize residual values, minimize maintenance costs, and minimize year-to-year fleet lease expense increases

PAWC also has two mechanics that are used to provide vehicle maintenance in the Pittsburgh District. These two mechanics at the Bethel Distribution Center (Bethel) perform preventive maintenance (PM) and minor repairs on the Distribution fleet of vehicles only. They do not provide service to any of the



automobiles that are out of Bethel. All of the other automobiles and light trucks at Bethel are serviced by external contractors. PAWC maintains a two-bay garage facility at Bethel. The reason given for retaining these two mechanics is that this is the way this service center has operated for years. It is the belief that it is better to perform the maintenance and repair work on an internal basis in this situation. That mindset stems from the specialized nature of the vehicles and the timeliness with which the work can be completed.

One mechanic is on the day shift and primarily focuses on PM, minor repairs, and state inspections. The other mechanic works the evening shift. He performs PM and is also responsible for fueling the vehicles each evening. The PM functions include oil changes, brakes, tires, state inspections, and minor repairs. Heavy repairs, such as collision damage or transmission repair, are done externally. The information collected related to the maintenance work performed at Bethel is transmitted to ARI for inclusion in their database and maintenance-exception reports.

The American Water Southeast Region (SER) Fleet Manager is located in Hershey, PA. He acts as the Fleet Manager for PAWC. This position is a part-time role that has been the responsibility of the AWWSC Southeast Region Manager of Operational Excellence since January 2006. Prior to 2006, a Manager of Fleet and Materials was responsible for these duties, but the position was eliminated when the designated employee was moved to another position. The current American Water SER Fleet Manager estimates that he spends about 50% of his time on fleet-management-related activities. While he does have some fleet-related responsibilities for other Southeast Region operating companies, these duties are very minor and require little time to be devoted to them. Therefore, the SER Fleet Manager devotes the large majority of his fleet-related time to PAWC. The American Water SER Fleet Manager receives transportation/fleet management assistance from three individuals: a PAWC network supervisor in the Pittsburgh District and the previously identified two full-time fleet management personnel within AWWSC.

The assigned responsibilities of the American Water SER Fleet Manager include the following:

- ♦ *Ordering replacement vehicles for PAWC* – The American Water SER Fleet Manager follows the American Water standard Vehicle Replacement Policy as the basis for making replacement decisions. Data from the vehicle statistics database, which is maintained by ARI, are used in this decision-making. The American Water SER Fleet Manager tries to replace 15% to 20% of the vehicle fleet each year in accordance with the American Water policy guidelines. He focuses on replacing vehicles that are older (generally five years and up) and that have historically had high maintenance costs. In addition to operating considerations, the replacement policy attempts to optimize residual values, minimize maintenance costs, and minimize actual year-to-year fleet-lease expense increases.

Exhibit IV-21 presents the American Water Vehicle Replacement Criteria as contained in the American Water Fleet Program Governance document. It should be noted that these criteria are to be applied with the use of judgment, so replacement cycle times could be longer or shorter based on the condition and amount of usage of the individual vehicle.

Exhibit IV-21
American Water Vehicle Replacement Criteria
as of January 24, 2006

Class	Mileage	Hours	Age (Months)	Miles (Hours) /Year
Passenger Car	60,000		48	15,000
Sport Utility Vehicle	75,000		48	18,750
Mini/Compact Van	75,000		48	18,750
Full Size Van	75,000		48	18,750
Light Duty Truck (Pick Up)	75,000		60	15,000
Light Duty Utility Truck	75,000		60	15,000
Medium Duty Truck	84,000		96	10,500
Heavy Duty Truck	96,000		96	12,000
Light Duty Backhoe		2,500	60	500
Medium Duty Backhoe		2,500	60	500
Heavy Duty Backhoe		2,500	60	500
Forklift			120	
Skid Steer Loader			60	
Trailers			120	
Excavator			96	

Source: Information Response 84

Orders for new large vehicles (heavy trucks) are targeted to be entered into the ARI system by March/April of each year for delivery by year-end. That way, delivery of the vehicles and recognition of associated lease expenses in the proper budget year is ensured. Cars and light trucks are normally ordered primarily in July/August to ensure delivery by year end. All of the vehicles in PAWC are leased with the exception of some that were acquired in corporate acquisitions and are owned outright. The leasing is currently done exclusively through ARI with some older leases remaining from General Electric (GE) for the period previous to ARI taking over the fleet management responsibilities in 2003. At the end of the lease, the American Water SER Fleet Manager completes a Vehicle Termination Notice form. GE or ARI would normally handle the disposal of vehicles through an auction process, with the proceeds being returned to PAWC (minus a transaction fee). An alternative means of disposal that is used on occasion is that PAWC's truck-maintenance and up-fitting firm, the New Harrisburg Truck Body Company, can fill out a Customer Offer Sheet and place a bid on a specific large truck. The American Water SER Fleet Manager makes a decision after checking this offer against published Blue Book prices to see if it is reasonable and acceptable.

- ◆ *Authorizing additional new vehicle acquisitions* – A request for an additional (as opposed to a replacement) vehicle is generated in the field and submitted to the PAWC Network Operations Manager for approval. This request and approval process is done primarily through the use of e-mail, rather than a formal document. After approval, the American Water SER Fleet Manager receives an e-mail from the PAWC Network Operations Manager. The American Water SER Fleet Manager then works with the local supervisor who originated the request to



develop a specification for the requested vehicle according to the specific needs of the requestor.

The AWWSC Fleet Manager is not involved in fleet-sizing decisions for the state-operating companies. Neither does he approve any increases that are made in the state-operating companies' fleet sizes. Such approval is strictly a locally made decision. The general rule of thumb is that employees who drive more than 14,000 business miles in a year will be eligible to receive a vehicle. However, this policy is not strictly enforced and there is no validation of the actual annual mileage for employees.

Fleet requirements at the American Water state-operating companies are directly influenced by the number of employees and the work they perform. Additional employees, or a permanent staff reduction, can result in increases or decreases in the number of vehicles in the fleet.

- ◆ *Budgeting* – The American Water SER Fleet Manager annually develops a five-year plan for the fleet management function, with a significant level of detail provided for the first year only. There are four major components of the fleet budget, those being:
 - Vehicle leasing expense
 - Fuel costs, which are extrapolated from historical usage and a conservative prediction of future fuel prices
 - Maintenance and licensing costs, which are estimated through the use of historical data that is extrapolated based primarily on the size of the fleet
 - Capitalization of a portion of fleet expenses, which results in a credit to O&M expenses
- ◆ *Accident reporting* – ARI sends the American Water SER Fleet Manager an accident report and he is responsible for making sure that the proper people are informed of the incident. ARI handles insurance claims as well as the associated investigations. American Water has a very high deductible with its insurance carrier. If an accident is the fault of PAWC, the funds to pay for repair of a PAWC vehicle come out of the fleet maintenance budget. If the damage is to another vehicle, the claim is paid out of liability insurance. The PAWC Risk Management Group in Hershey handles driver training and safety.
- ◆ *Review of monthly ARI bills* – The American Water SER Fleet Manager reviews the monthly bills from ARI to identify any errors that may be included. It is, however, the final responsibility of the AWWSC Fleet Manager to approve the invoices for payment. The American Water SER Fleet Manager is also responsible for monitoring those GE-leased vehicles that are being removed from the fleet to ensure that they are disposed of in a timely manner. Performance of this duty ensures that ARI is informed of such vehicles' status and stops billing the monthly service charge to PAWC. As of the end of 2007, the PAWC fleet no longer had any GE-leased cars and had only about 50 to 60 GE-leased large trucks that are on eight-year leases.

There is an existing American Water Fleet Policy Team, which is composed of the AWWSC Fleet Manager and other relevant AWWSC employees. This group is essentially an ad hoc team whose purpose is to make sure the fleet management policies applied at each of the American Water operating companies are consistent across all of the companies. This effort has been in progress since late 2006. There is no established timeframe for completion of the work.

The Fleet Policy Team consists of the following individuals:

- ◆ Director of Human Resources Systems and Processes
- ◆ A member of the Taxation group
- ◆ AWWSC Fleet Manager
- ◆ A member of the Payroll group
- ◆ Manager, Employee Services
- ◆ Manager, Internal Audit
- ◆ Manager, Internal Audit
- ◆ Director, Employee & Labor Relations
- ◆ Director, Business Performance
- ◆ Director, Network
- ◆ Manager, Business Performance
- ◆ Superintendent, Operations

Documentation produced as of September 2007 includes:

- ◆ Draft Revised Vehicle Utilization and Mileage Reimbursement Policy
- ◆ Draft Vehicle Utilization Practice
- ◆ Draft Company Vehicle Assignment Application
- ◆ Draft revised vehicle-mileage log and transportation personal-use form

The American Water Fleet Management Program Governance document was updated in August 2007 by the AWWSC Fleet Manager and the various regional fleet managers. As of December 2007, there was an ongoing project that targeted updating of the Vehicle Utilization Policy. The focus of this project is on improving the reporting of the personal use of company vehicles. To better track this information, ARI is developing a database of information based on the 525 form, which is used for reporting personal use of vehicles by employees. The overall intention is to strengthen the existing policy.

Fleet Operating Performance Statistics and Trends

Exhibit IV-22 contains standard fleet operating performance statistics for PAWC for the period of 2005 through 2007.



Exhibit IV-22
PAWC Annual Fleet Operating Performance Statistics
2005 to 2007

	2005	2006	2007
Employees per Vehicle	1.4	1.4	1.4
Average PM Costs per Vehicle	\$75	\$100	\$105
Average Repair Costs per Vehicle	\$1,198	\$1,026	\$1,097
Average Total Operating Costs per Vehicle	\$8,422	\$8,829	\$8,911
Average Total Fuel Costs per Vehicle	\$2,548	\$2,723	\$2,977

Source: Information Response 814

ARI replaced GE Fleet Services as PAWC's fleet management company in mid-2003. Therefore, detailed data and/or reports from GE Fleet Services are not available to enable PAWC to develop fleet performance statistics for the years prior to 2005. Review and trend analysis of the data contained in *Exhibit IV-22* shows some line items that increase and some that decrease. Overall the trends appear to be reasonable when considered in light of inflationary times and the rising fuels costs of the reference period.

ARI

ARI handles the majority of the fleet management responsibilities for American Water and PAWC. ARI has been the American Water-contracted fleet management firm since 2003. GE was the previous provider of fleet management services for PAWC, but ARI became American Water's company-wide fleet management contractor.

This vehicle leasing/fleet management contract was last bid in 2003. After a formal evaluation of the four bids that were received, ARI was selected as the preferred provider. The vehicle leasing/fleet management contract is scheduled to be rebid in 2008. It was stated that pricing will not be a major consideration; rather, performance will be the primary differentiating factor. ARI is responsible for establishing the contracts with services providers. All vehicles are leased from ARI, which acquires them based on the national purchase contracts with manufactures that are set up by the AWWSC Supply Chain group.

ARI is headquartered in Mount Laurel, NJ, which is near to Voorhees, NJ, the headquarters of American Water. ARI maintains a call center in Mount Laurel that is staffed by experienced mechanics. When a vehicle is taken to an ARI-approved repair shop, in accordance with the American Water Fleet Management Policy, the repair shop must call ARI for approval to make the repair. ARI can approve repairs that are less than \$1,000. If the repair is estimated to be between \$1,000 and \$5,000, ARI will call the American Water SER Fleet Manager for his approval. Such approval is based on the current status (age) of the vehicle and its repair history. The American Water SER Fleet Manager receives advice on these decisions from the call center mechanics at ARI. For repairs that are estimated as being over \$5,000, ARI will call the AWWSC Fleet Manager for approval.

In accordance with the Lease, Purchase/Disposal, and Fleet Management Services Agreement between ARI and AWWSC, ARI is paid a monthly fee that is calculated based on each service performed on a per-vehicle basis. Per the contract, the fleet management/service program fees that are to be charged by ARI to any American Water state-operating company that is using its services include the following:

- ◆ *Maintenance Management Program Fee:* \$4.25 per vehicle per month for passenger cars and trucks up to and including 15,000 pounds gross vehicle weight (GVW) without exterior up-fitting; or \$8.25 per vehicle per month for trucks over 15,000 pounds GVW and other equipment
- ◆ *Licensing Management Program Fee:* \$2.75 per vehicle per month
- ◆ *Title Maintenance Program Fee:* \$0.50 per vehicle per month
- ◆ *24-Hour Roadside Assistance Program Fee:* \$20.00 per occurrence
- ◆ *Fleet Insurance Management Program – Accident Reporting/Claims Analysis/Appraisals and Repairs Fee:* \$1.15 per vehicle per month; Subrogation Recovery Program Fee: 20% of recovery

The above listed fees are in addition to the actual costs incurred in the provision of the various programs. For example, vehicle-maintenance service charges would be passed on by ARI to PAWC based on the actual invoice from the automotive-repair service performing the work.

Fleet Composition and Annual Expenditures

Exhibit IV-23 which follows presents vehicle size by class for EOY 2003 through 2007. This data was provided by ARI and represents a “snapshot” of the vehicles having an active status at year-end.

Exhibit IV-23
PAWC EOY Vehicle Fleet Composition
and Trends by Vehicle Class
2003 to 2007

	2003	2004	2005	2006	2007	Percentage Change from 2003 to 2007
Automobiles	71	61	61	59	68	-4.2%
Pickup Trucks	240	198	221	253	294	22.5%
Sport Utility Vehicles	20	20	37	39	31	55.0%
Dump Trucks	45	46	55	49	46	2.2%
Maint./Utility Trucks	148	145	157	147	146	-1.4%
Passenger Vans	9	9	8	7	7	-22.2%
Work Vans	178	140	142	139	130	-27.0%
Total	711	619	681	693	722	1.5%

Source: Information Response 808

PAWC stated that it believes the total number of vehicles, in all years except 2004, is overstated due to an accounting lag in getting vehicles that have been physically retired and removed from ARI's database



after replacement vehicles have been delivered. Part of the reason given for this is that replacement vehicles are ordered with a delivery target of November/December. Therefore, if ARI is not notified in a timely manner that a replacement vehicle has arrived, or if the replacement vehicle is delivered close to year-end, both the replacement vehicle and the old vehicle could theoretically be listed as active in the ARI database.

In support of this contention of a lower vehicle count, PAWC provided the data included in *Exhibit IV-24*. This data presents the number of vehicles for which it claimed, or anticipated to claim, leased vehicle expense in rate filings for the years 2003 through 2007.

Exhibit IV-24
PAWC Revised EOY Vehicle Count
2003 to 2007

Historic/Future Test Year	2003	2004	2005	2006	2007	Percentage Change from 2003 - 2007
Total Vehicles	673	610	612	647	665	-1.2%

Source: Information Response 808

PAWC explains that the reduction in total vehicles from 2003 to 2004 and 2005 is reflective of the staffing reductions that occurred as a result of the Thames Water reorganization initiative, as well as the transfer of PAWC employees to the Southeast Region Service Company. The increase in total vehicles from 2005 to 2006 and 2007 reflects staff additions, as well as the transfer of employees from the Southeast Region Service Company back to PAWC as American Water returned to state-focused operating companies.

Exhibit IV-25 presents data on the average number of miles driven per month per vehicle by class of vehicle. The data used in the calculation represent actual data for the life of each respective vehicle.

Exhibit IV-25
PAWC Fleet Utilization Statistics
as of August 31, 2007

Vehicle Class	Average Miles/Month
Cars	938
Pickup trucks	1,086
Vans	988
SUVs	1,123
Utility trucks	717
Dump trucks	750
Other, special	442

Source: Information Response 87

Exhibit IV-26 presents an analysis of the annual expenses incurred by PAWC for fleet operations and maintenance versus the amount that was budgeted for each year.

Exhibit IV-26
Operations and Maintenance Budget Versus Actuals
2002 to 2007

	2002	2003	2004	2005	2006	2007
Capitalized	(\$1,227,390)	(\$1,229,681)	(\$1,418,075)	(\$1,106,780)	(\$1,382,431)	(\$1,718,252)
Lease Expense	4,952,250	\$3,796,208	\$4,179,386	\$3,473,628	\$4,071,094	\$4,276,078
Fuel Expense	981,417	\$1,163,704	\$1,490,660	\$1,768,100	\$2,028,099	\$2,310,586
Maintenance and Registration	1,108,418	\$1,430,786	\$1,231,181	\$1,019,214	\$995,844	\$1,057,156
Actual expenditures	\$5,814,695	\$5,161,017	\$5,483,152	\$5,154,162	\$5,712,606	\$5,925,568
Budgeted expenditures	4,469,837	5,261,529	5,235,820	4,628,049	4,586,079	6,044,968
Variance	1,344,858	(100,512)	247,332	526,113	1,126,527	(119,400)

Source: Information Responses 85 and 811

During this period of time (2002 to 2007), PAWC made no capital expenditures related to the transportation/fleet function.

In response to an information request for an explanation of the reason that the budget numbers were significantly exceeded in 2002, 2004, 2005, and 2006, PAWC provided the following explanations:

- ◆ Capitalized transportation credits have a direct relationship to capitalized payroll. More or less than the budgeted capitalized payroll produces more or less than budgeted capitalized transportation credits.
- ◆ The vehicle lease cost component is influenced by the sale of vehicles that are coming off of lease, which are credited back to the vehicle lease expense account. If sales are delayed or otherwise do not occur as planned, credits are not recognized as were budgeted. Also, delays in the arrival of replacement vehicles are the direct cause of delays in disposing of old vehicles.
- ◆ Unstable and rapidly increasing fuel costs also contributed significantly to overages in the 2004 to 2006 timeframe. While the actual total transportation expenses for 2007 were under budget, fuel costs were again significantly above the budgeted figure.

ARI fees are included in the contract on a monthly per-vehicle basis (i.e., a set amount for handling maintenance for that vehicle for the month). The American Water SER Fleet Manager gets a monthly bill from ARI that is detailed on a per-vehicle basis. The SER Fleet Manager reviews and approves these bills on a monthly basis, but they are paid by American Water in Voorhees. The charges that are paid by AWWSC on behalf of PAWC are subsequently charged back to PAWC.

Exhibit IV-27 presents data on the amount of the annual billings from ARI to PAWC for its services for the period 2003 through 2007.



Exhibit IV-27
ARI Annual Billings to PAWC
2003 to 2007

	2003	2004	2005	2006	2007
Lease Expense	\$95,724	\$1,036,152	\$2,082,177	\$3,454,779	\$4,439,703
Miscellaneous Expense*	545,753	2,640,581	2,879,208	2,932,938	3,224,110
Total	\$641,477	\$3,676,733	\$4,961,385	\$6,387,717	\$7,663,813

* The Miscellaneous Expense category is composed of expenses related to maintenance, fuel, and licensing.
Source: Information Responses 363 and 813

ARI did not become PAWC's leasing company until mid-2003, replacing GE Fleet Services. As such, the total annual leasing expense to PAWC is a combination of the leasing expenses from GE and ARI. This data is presented in *Exhibit IV-28* which follows.

Exhibit IV-28
Total Vehicle Leasing Expense
2003 to 2007

	2003	2004	2005	2006	2007	Total % Increase from 2003 - 2007
GE Lease Costs	\$4,677,151	\$3,211,687	\$2,283,635	\$1,458,202	\$763,899	
ARI Lease Costs	95,724	1,036,152	2,082,177	3,454,779	4,439,703	
Total	\$4,772,875	\$4,247,839	\$4,365,812	\$4,912,981	\$5,203,602	9.0%

Source: Information Response 814

It should be noted that the above data represents only leasing expenses and does not include any credits accrued from the sale of used vehicles.

Major Processes and Systems

Vehicle Acquisition

The standardized vehicle replacement schedule, as contained in the American Water Fleet Program Governance guidelines, drives the vehicle-ordering process. The American Water SER Fleet Manager electronically creates and transmits in the ARI system the recommended vehicle order to the PAWC Network Operations Manager for approval. The actual vehicle ordering is done through ARI's online computer system for all vehicles other than large trucks. The PAWC Network Operations Manager's electronic approval in the ARI system triggers the resulting purchase order for ARI to acquire the vehicle.

The American Water SER Fleet Manager can access an ordered-vehicle status report, which presents the delivery-schedule status for each vehicle that is on order. This scheduling information is incorporated into any decisions as to whether to make major repairs on an existing vehicle. There is an expeditor at ARI who monitors the status of vehicles that are on order for American Water. The expeditor also monitors the schedule related to completing the new vehicle up-fitting process.

The ordered vehicles are delivered by the manufacturer through a local dealer. This dealer performs the dealer preparation work on each vehicle. The up-fitting (addition of necessary truck-mounted equipment and storage facilities) of large trucks is done by the New Harrisburg Truck Body Company, under a national contract with Knapheide. Knapheide also up-fits pickup trucks and vans.

There are negotiated standard prices for all vehicles with the respective manufacturers. Contracts are established with the manufacturers for a contract period of one to two years by the AWWSC Supply Chain group. As of November 2007, American Water worked with three vehicle manufacturers, those being:

- ◆ International for utility trucks and dump trucks
- ◆ Daimler Chrysler for light trucks and cars
- ◆ Toyota for pickup trucks

In September 2007, the AWWSC Fleet Manager developed and sent out a request for pricing for light trucks and automobiles to the various manufacturers that are capable of providing such vehicles. The request for quote (RFQ) was sent to the Big 3 U.S. automobile manufacturers (Ford, General Motors, and Chrysler) as well as Toyota. The selection decision will be made in conjunction with the local fleet managers, with a decision schedule slated by the end of the 2007 calendar year. The evaluation and analysis of the bids will be done by the AWWSC Fleet Manager, in conjunction with members of the AWWSC Supply Chain group. The standardized bid-evaluation criteria and procedures of the Supply Chain group serve as the basis of this evaluation.

ARI works with American Water representatives at the annual Vehicle Specification Review meeting. The purpose of the meeting is to analyze vehicle specifications with the intention of standardizing the American Water-approved vehicle listing to the greatest extent possible. If a request is made for a vehicle that is different from the standard specification vehicle, the requestor must validate the special request with a business case.

Vehicle Maintenance and Repair

ARI provides a maintenance packet that is placed in the glove compartment of each new light truck or automobile. This package includes the PM schedule and maintenance coupons that are to be submitted to the maintenance service provider. That information is then sent to ARI for entry into their vehicle-maintenance database. After the maintenance service is completed, the service provider must furnish information on the service that was performed on the invoice. This invoice can be transmitted to ARI either in paper format, online, or, in the case of national accounts (such as those with Goodyear and



Firestone), bundled in a bulk monthly billing. Oil changes and general maintenance are to be performed every 5,000 miles.

ARI provides a Maintenance Exception Report once a month that comes to the American Water SER Fleet Manager. This report lists the maintenance work that should have been performed during the month but was not completed. The American Water SER Fleet Manager then sends out copies of this report to the various responsible supervisors to inform them of the situation and for enforcement of the maintenance-policy guidelines with their assigned employees. Most of the exceptions are related to oil changes that were missed. This list normally contains about 60 vehicles (about 10% of the fleet) in a typical month. Large vehicles do not have maintenance packets that are issued to them. Therefore, it is up to the supervisors to ensure that the required maintenance and repairs are performed in accordance with the American Water Fleet Maintenance policy.

ARI approves the vendors that are to be used for repair and maintenance work and maintains a list thereof. If a regional group has dealt with a local vendor and has had a good experience with that vendor, they can request that this vendor be added to the approved list. It generally takes ARI only about a day to certify a new vendor. ARI-certified vendors give a discount on the maintenance and repairs they perform for American Water companies. Because using the services of ARI-approved vendors is not compulsory, the AWWSC Fleet Manager estimates that there is currently approximately 85% compliance with using ARI-approved vendors for service and repairs performance. Replacement tires are acquired from Firestone/Bridgestone based on a national contract.

State inspections are the responsibility of the assigned vehicle driver. There are no standardized reports or data collected on the status of state inspections. ARI handles all of the vehicle-licensing and renewal processes.

In the case of vehicle repairs, the service provider must call ARI to get the repair approved prior to providing any repair service. When the invoice is submitted to ARI for payment, the repair information provided on the invoice is compared to the repair's original authorization before payment is approved.

In the case of service being provided by a vendor that has not been previously certified by ARI, the potential vendor must call ARI. ARI will then set up the vendor in its system and provide that vendor with ARI-certified status.

In those situations where ARI representatives have a question they cannot answer (such as whether to up-fit a truck with non-standardized equipment), ARI will call the American Water SER Fleet Manager for an answer or an approval. This protocol also applies to fleet management policy-enforcement issues, for which ARI does not have responsibility.

Fuel Supply

ARI employs a fuel card system for purchasing fuel and monitoring transactions associated with such purchasing. The fuel cards that are used are from the Wright Express Company and are referred to as

WEX cards. WEX cards are used for fuel purchases by most fleet vehicles. These cards are used just like a credit card and are accepted at approximately 80% of service stations nationwide. Each vehicle is assigned an individual card, and at the time of the purchase, the driver must enter the mileage on the vehicle and the driver's PIN to validate the transaction as authorized.

The WEX cards are used at private gas stations and the data is recorded by the ARI database. As of the end of 2007, American Water was not realizing a discount on fuel from the private gas suppliers. A new strategy of using fewer vendors to achieve discounts on fuel was reviewed at one time, but it would require the use of a very limited number of vendors, a requirement which would be very inconvenient considering the widespread locations of the American Water operations nationwide. Currently, fuel and maintenance expenses are tracked on an area-by-area weekly basis.

Only the Pittsburgh and Hershey Districts maintain a bulk-fuel supply for their vehicles. PAWC operations personnel are responsible for the acquisition of bulk fuel, but this policy is currently being reviewed by the AWWSC Supply Chain group. Data concerning the vehicle and driver must be entered at the PAWC pumps in order to get fuel. This data is used to track the amount of fuel that is pumped for each transaction and for each of the two facilities in total. Such data is maintained in separate databases that are run at each of the two facilities.

The American Water SER Fleet Manager receives two other monthly exception reports from ARI, those being:

- ◆ A listing of vehicles that were fueled with more than 40 gallons of fuel in one day (usually due to large trucks with dual tanks)
- ◆ Vehicles that had more than one fueling transaction in one day

The Regional Fleet Manager transmits this information to the appropriate managers or supervisors so that they can investigate and take corrective action, as required.

ARI Processes

ARI is responsible for the provision of the following services for PAWC:

- ◆ Vehicle registration and registration renewal program
- ◆ Fuel card program – from which fuel usage data can be collected
- ◆ Accident management – the vehicle operator calls in to ARI to report the accident and ARI then records the information, oversees the repairs, and files a claim against the third parties, if applicable
- ◆ Vehicle-title management program – ARI maintains possession of the titles for all American Water vehicles that were leased from ARI
- ◆ Vehicle acquisition and leasing



ARI maintains an 800 number that is used to check on the status of new vehicles, to register vehicles, or for fleet maintenance.

ARI also provides an accident management function to American Water companies. For accidents that are determined to be the fault of the PAWC driver, ARI manages the repair process but does not get involved with the third party. This third-party contact would be handled by the PAWC Risk Management group through the Company's insurance carrier. ARI uses Collision Experts, Inc. (CEI) whose representatives investigate the accident, if required, and oversee the repair of the PAWC vehicle using CEI-certified body shops.

Subrogation is the filing and collection on claims against third parties as a result of accidents that are caused by the action of the third party. ARI takes the responsibility for investigating these accidents and for submitting, negotiating, and collecting on the claim. For its services, ARI is paid 20% of the amount that is collected as a result of the claim.

Exhibit IV-29 presents data on the amounts recovered as a result of subrogation by ARI for the period 2003 through 2007.

Exhibit IV-29
Accident Dollars Recovered Due to
Subrogation by ARI
2003 to 2007

	2003	2004	2005	2006	2007
Accident Amount Recovered	\$6,724	\$14,282	\$3,876	\$8,478	\$39,805

Source: Information Response 815

To perform the vehicle disposal function, ARI normally uses an auction house although it may be occasionally carried out through eBay. ARI charges \$100 per vehicle for this disposal service.

ARI Systems

The internal ARI fleet-management information application is named Fleet Track. Fleet Track is a workflow management application that is used for tracking questions and requests. Additionally, ARI's Insights program is used for tracking vehicle data and maintenance records. Insights is a homegrown package that was developed internally at ARI based on the application that was previously used. It was implemented on January 1, 2007. ARI posts monthly performance data reports to its website. These monthly reports include the following:

- ◆ Current vehicle inventory
- ◆ Fuel analysis
- ◆ Insurance claims analysis
- ◆ Maintenance analysis

- ◆ Savings analysis – documentation of the money recovered
- ◆ Vehicle cycling analysis
- ◆ Vehicle expense summary
- ◆ Vehicle order analysis
- ◆ Vehicle remarketing analysis
- ◆ Vehicle remarketing summary
- ◆ Vendor analysis

These reports are posted to the ARI website between the fifth and the tenth of the month for the previous calendar month. Tracked data are also made available in a real-time mode through ad hoc reporting. It is the assigned responsibility of the American Water SER Fleet Manager to review these reports on a regular basis. Additionally, all vehicle-related documents are maintained in the system and available online. Such documents include vehicle invoices, vehicle registration, licensing, title, and order specifications.

There are also two “push reports” that are transmitted to the American Water SER Fleet Manager on a monthly basis, those being:

- ◆ A preventive-maintenance exception report that lists vehicles that are past due for their standard preventive maintenance (i.e., over 5,000 miles or six months)
- ◆ A fuel exception report that presents cases where a vehicle was refueled three times or more in a 24-hour period or where more than \$150 in fuel was purchased in this same period

The ARI fleet management reports are quite detailed in nature. ARI has an internal programmer who makes any required changes to the reports. The AWWSC Fleet Manager stated that ARI has been very responsive to requests for report modifications.

ARI maintains an online vehicle database for PAWC. All of the information that is transmitted from the maintenance and repair shops is entered into this database.

Internal Audit of the Fleet Management Function

An internal audit of the fleet management function was completed in November 2005 by the AWWSC Audit Services group. As stated in the audit report, the purpose of the audit was: “We reviewed and evaluated the adequacy, effectiveness, and efficiency of internal controls and compliance with corporate and regional policies relating to billing, payroll, and fleet vehicle management.” The audit scope for the fleet vehicles’ portion of the internal audit was limited to the Wilkes-Barre/Scranton District. The final audit report included negative findings in relation to the following topics:

- ◆ Improper reporting of taxable benefits relating to employer-provided vehicles – The resulting recommendation stated that there needs to be a reassessment of the PAWC policy relating to the use of employer-provided vehicles that are used for personal purposes in order to be in compliance with IRS regulations.



- ◆ Records relating to the business use of vehicles – The recommendation for implementing vehicle logs that detail the date, miles driven, destination, and purpose of the travel was satisfied in early 2006.
- ◆ Non-compliance with Corporate Vehicle Utilization Policy – As intended by the Vehicle Utilization Policy, pool vehicles should be provided to employees only during normal business hours and are to be taken home only when the employee is scheduled to be on call. The investigation found that this policy was being violated in the Wilkes-Barre/Scranton District.
- ◆ Lack of development and approval of a comprehensive fleet-vehicle policy – The recommendation was that a Corporate Fleet Program Governance Policy be developed. This comment has been addressed since the time of the audit.
- ◆ A physical inventory of vehicles leased from ARI had not been performed since 2003. In response to this finding PAWC used a temporary employee to collect this vehicle inventory information in late 2005/early 2006.

Findings & Conclusions

Finding IV-13 The current American Water employee vehicle assignment policy does not include a provision for an annual review of the requirements of employees for vehicles and, therefore, it does not address changes in employee job titles and positions.

Over the course of time, it can be expected that PAWC employees will change positions and therefore their job responsibilities will change. In some cases, it can be expected that employees who were properly assigned a vehicle based on their driving requirements will transition to a new job that does not have the same driving requirements. As a result, they will no longer require the assignment of a vehicle. Under the current procedures, this change in job status and requirements could easily be missed due to the lack of a formal annual-review process. It could be reasonably expected that if such a review process were established, situations would be identified where vehicles could justifiably be taken back from employees. This tendency might present the opportunity to reduce the size of the fleet or to avoid having to procure a new, additional vehicle for an employee who rightfully requires one.

Finding IV-14 A regularly scheduled physical inventory of vehicles leased from ARI is not performed.

This deficiency was one that was pointed out in the internal audit that was conducted in November 2005 but regular physical inventories of vehicles are still not being performed. A physical inventory of the entire fleet, as provided by ARI, should be undertaken on a regularly scheduled basis to ensure that the vehicles on the fleet-inventory listing are still in the possession of PAWC and that the information that has been recorded in relation to these vehicles is correct.

Finding IV-15 There is an exception report for multiple fuel transactions in one day but not for apparently excessive fuel usage over a period of time (i.e., weekly or monthly).

Daily data on fuel transactions is currently being collected by ARI, but the resulting reports are produced only on a daily basis. This results in a lot of data to be inspected and may not easily identify systemic problems with fuel usage. Because the data is already being collected and is available, a computer program should be developed that would aggregate this data and report it on a weekly or monthly basis. Such resulting reports would be much easier to review and would clearly call out systemic problems, rather than just one-day or very short-term aberrations.

Finding IV-16 Neither the ARI contract nor the resultant invoices have been audited by the AWWSC Internal Auditing group.

The amount of money that is being paid to ARI for fleet management services is very significant. Therefore, an internal audit of the contract, the resulting transactions, and the monthly invoices would be a good precautionary action. It is also possible that such an audit would be able to identify ways to expedite or improve the current processes.

Finding IV-17 Continued use of the two PAWC mechanics in the Pittsburgh District goes against the recommended policies of American Water and may not be cost-effective.

American Water began using ARI for all of its state-operating companies to achieve economies of scale in relation to the fleet management function. The intention of this initiative was to achieve cost savings. Failure to follow this policy based primarily on past precedent may not be resulting in PAWC attaining the maximum savings it could if ARI and its approved service providers were being used consistently. The economic costs and benefits of using in-house mechanics have not been reviewed or evaluated by PAWC.

Finding IV-18 The improper reporting of taxable benefits relating to employer-provided vehicles that was identified in the internal audit conducted in November 2005 has yet to be addressed in a satisfactory manner.

The internal audit recommendation stated that there needs to be a reassessment of the PAWC policy relating to the use of employer-provided vehicles for personal purposes in order to be in compliance with IRS regulations. Such a full evaluation has yet to be performed, so problems with this reporting could potentially still exist.



Finding IV-19 **There are no standardized reports or data collected on the status of state inspections for vehicles in the PAWC fleet.**

State inspections are currently the responsibility of the assigned vehicle driver. This policy could result in problems if the driver is not vigilant and attentive. While the vehicle operators may be very well intentioned, it is always possible to miss a required date. This could potentially result in a problem for PAWC from a liability perspective if an uninspected vehicle were to be involved in an accident. Additionally failure to have the vehicle inspected per the established state inspection schedule could conceivably create safety issues for both PAWC employees and the general public.

Recommendations

Recommendation IV-12 **Initiate a formal procedure requiring an annual review of the requirements for each employee to have an assigned vehicle based on his or her current job assignment. (Refer to Finding IV-2.)**

Performing such an annual review should be a relatively uncomplicated process that could be done in conjunction with the operating staff and the Human Resources Department. The current rule is that vehicles are assigned to those employees who regularly drive more than 14,000 miles a year (excluding any personal mileage). Strict monitoring and enforcement of this rule could result in significant cost savings to PAWC based on a potential reduction in the size of the fleet required. In future years, once the initial review has been completed, the review would need to focus only on those employees whose job title, position, or responsibilities have changed during the preceding year to determine if their vehicular requirements have been impacted.

Recommendation IV-13 **Develop a formal procedure that details a requirement for the performance of a regularly scheduled annual physical inventory of the vehicles that are leased from ARI. (Refer to Finding IV-14.)**

It is good operating practice to regularly inspect the vehicles in a fleet to ensure that they are all accounted for and that all of the information included on each one is accurate. Development of a new formalized physical inventory procedure will provide guidance to this practice. It will also ensure that the inventory is performed on a regularly scheduled basis and in a structured and consistent manner.

Recommendation IV-14 Develop an exception report that would clearly identify excessive fuel usage by specific vehicles or employees on a weekly or monthly basis. (Refer to Finding IV-15.)

Such a computer program would simply aggregate the daily data that is already available and report it on a weekly or monthly basis, which is a much more useful format. This type of reporting would allow for a more expeditious and easily performed review of the data to identify any systemic problems that are occurring.

Recommendation IV-15 Perform an internal audit of the ARI contract and the resultant invoices using the AWWSC Internal Auditing group. (Refer to Finding IV-16.)

Considering the size of the payments that are made to ARI and the transactional volume of the services it provides, performance of such an audit is very important. It could potentially result in cost savings and/or improvements in operational and transactional efficiency.

Recommendation IV-16 Perform a cost/benefit analysis to determine whether the continued use of the two PAWC mechanics in the Pittsburgh District is cost effective. (Refer to Finding IV-17.)

The basic reason for using the services of ARI is to allow the state-operating companies of American Water to be able to gain economic benefits through the economies of scale that are achieved. Therefore it does not seem justifiable for one district to perform these tasks on an internal basis, even if limited in scope. However, there may be extenuating circumstances due to the specific circumstances and the area demographics that would make continuing the practice justifiable. A formalized cost/benefit analysis that considers all relevant factors would provide the basis for a proper determination of a future course of action.

Recommendation IV-17 Perform a reassessment of the PAWC policy relating to the use of employer-provided vehicles that are used for personal purposes in order to be in compliance with IRS regulations. (Refer to Finding IV-18.)

Performance of such an evaluation is important to determine with surety whether the current policy is compliant with IRS regulations. If problems are found with the current PAWC policy, the policy should be modified and a retrospective financial assessment should be performed to determine the extent of the errors in reporting that were created in the past.



Recommendation IV-18 **Develop a computerized tracking system that is capable of monitoring the completion of the annual state-vehicle inspections for the individual vehicles in compliance with the established schedule. (Refer to Finding IV-19.)**

It is important that the state inspections be performed in accordance with the prescribed schedules. With all of the other data that is being collected relative to vehicle operations and maintenance (O&M) and compliance with PM schedules, it should be relatively easy to add tracking of state-inspection completion to the data being monitored. Tracking of this data would allow for monitoring of the state inspections status from one centralized point of review. Problem situations could be quickly identified and accordant corrective action taken.

C. Facilities and Property Management

This chapter provides a discussion of facilities and property management services provided by either American Water Works Service Company (AWWSC) or Pennsylvania-American Water Company (PAWC) in relation to the facilities and properties that are owned or used by PAWC.

Background & Perspective

Organization & Staffing

Since RWE Thames Water Utilities left American Water in 2006, there has been no formal corporate group for the facilities and properties management function. The group that was established by RWE Thames Water Utilities was primarily intended for the divestment of excess properties and facilities. As such, there is currently no formal organization or staffing that is focused on the facilities and properties management function at either PAWC or American Water.

Various individuals are assigned the part-time responsibility for managing and budgeting the operations and maintenance (O&M) and capital expenses programs for the various PAWC operating and office facilities. These designated individuals are usually managers or supervisors who work out of the facility for which they are responsible. For example, the Bethel Distribution Center, which is located in the Pittsburgh District, is the responsibility of the Supervisor of Network Operations who is based there. Facilities and properties-related work is done on a part-time basis in addition to regularly-assigned responsibilities. Each designated employee is responsible for his or her assigned site only. The Regional Supply Chain Manager, who is located in Hershey, is responsible for the bidding process for the acquisition and contracting of facility and property O&M services. The designated responsible local employee who is assigned the duty of overseeing the normal O&M function has direct input into the vendor-selection process for contractors.

The O&M budgeting process for each district is the final responsibility of the District Operations Manager. Standard maintenance work is included under the maintenance budget for each specific facility.

Facility and land acquisition at American Water is done as part of the capital-budgeting effort and occurs via one of two distinct procedures. Generally, facilities and land acquired through the acquisition of other water and wastewater systems (one of the six types of projects that must go through the commercial development process, including fixed asset investments, material contracts, financial investments, land/property, joint ventures/alliances, and American Water consultancy projects) are approved by a regional Commercial Development Committee (CDC). The regional CDC is composed of the following members:



- ◆ Business Unit (BU)/AWE President (Chair)
- ◆ Vice President (VP) Finance
- ◆ Legal Counsel
- ◆ VP Service Delivery/Operations
- ◆ State President

The CDC evaluates and approves or disapproves all non-routine transactions that the operating company may potentially enter into for the purpose of generating revenue, including water and wastewater utility acquisitions. Key operational, economic, and financial information, as well as risk analysis, is evaluated by the CDC during review of the proposed transaction.

The American Water Commercial Development Committee (AWCDC) is required to approve any real estate sales or purchases having a value in excess of \$500,000. The AWCDC is composed of the following members:

- ◆ Chief Operating Officer (Chair)
- ◆ Chief Financial Officer
- ◆ VP Planning & Reporting
- ◆ Associate Corporate Counsel
- ◆ VP of Operations Services
- ◆ Senior VP (SVP) Sales & Business Development

Facility and land acquisition outside of utility acquisitions are reviewed and approved by the Capital Investment Management Committee (CIMC). The CIMC responsible for regional BUs is composed of the following members:

- ◆ PAWC President
- ◆ PAWC VP of Engineering
- ◆ PAWC VP of Operations
- ◆ PAWC Capital Programs Manager
- ◆ Southeast Region Finance Director

Necessary specific facilities that are to be acquired to make capital improvements, such as land for booster or chlorination stations, tank sites, etc. or buildings for offices or operations centers, are reviewed and approved by the CIMC in accordance with capital-investment management governance.

According to the listing of property values that was used to renew PAWC's insurance coverage for 2007, the insurable value of PAWC's buildings (replacement cost of buildings only, as land is not insured) was \$456,341,137 (original cost totaling \$275,789,614). It was stated in the data response that the age and square footage of the individual properties were not readily available.

The realty holdings of PAWC fall into three general categories:

- ◆ *Utility water* – the portion of PAWC's land and plant that is devoted to its water operations, i.e., the land and plant that is used and useful in providing water service to customers.
- ◆ *Utility wastewater* – the portion of PAWC's land and plant that is devoted to its wastewater operations, i.e., the land and plant that is used and useful in providing wastewater service to customers.
- ◆ *Non-utility water* – the portion of PAWC's land and plant that is not used and useful in providing service to customers, i.e., land held for future use or land and buildings removed from utility plant in service and awaiting disposition.

A source for PAWC's utility water realty-holdings valuation is the 2006 Public Utility Realty Tax Act (PURTA) Report. The PURTA Report is an annual report that is filed with the State of Pennsylvania's Department of Revenue. It reports, by county and by individual parcel, the county-assessed real estate and state-taxable value amounts. Parcels listed on the PURTA Report are not subject to local real estate taxation. The 2006 PURTA Report, which summarizes PAWC's utility water realty holdings on a county-by-county basis, shows that the total utility water realty holdings of PAWC have a county-assessed value of \$36,599,321 and a state taxable value of \$106,132,611. The original cost of utility water land and buildings held at December 31, 2007 totaled \$277,215,597).

Utility wastewater and non-utility water are not required to be reported on the PURTA Report; however, a local real estate tax is assessed on these properties. Individual assessment values were not provided by PAWC during this audit; however, the original cost of utility wastewater and non-utility water holdings of PAWC at December 31, 2007 was \$17,565,198 and \$474, 407, respectively. The total original cost of all PAWC holdings for utility water, utility wastewater, and non-utility water at December 31, 2007 was \$295,255,202.

Space-planning studies and analyses for PAWC facilities have been handled in the recent past by designated representatives of the PAWC Human Resources and Engineering groups on an as-needed basis. Studies that have been performed in the recent past were for the purpose of space planning in advance of the lease of a new facility in Wilkes-Barre and of space configuration changes at the Hershey and Mechanicsburg office facilities. The final office-layout designs were developed by an architectural/engineering consultant.

Expenditures

In the response to a request for the actual and budgeted facilities and property-management operating and maintenance (O&M) and capital expenditures, it was stated that PAWC does not have a department that is charged with the responsibility to manage and control facility and property-management functions. Therefore, there is no specific budget for these activities. Actual O&M expenses and capital expenditures that are incurred in carrying out these activities are not captured by the company in a manner that permits such data to be readily available to serve as a management tool. For PAWC's accounting of both O&M expense and capital expenditures, its detailed chart of accounts is mapped to NARUC's broader 1996 uniform system of accounts (USOA) for Class A water and wastewater utilities.



For O&M expenses, costs are assigned to the BU to which a particular building is assigned. For capital expenditures, a work order captures expenditures associated with a particular project, following which the expenditures are transferred from construction work in progress to a utility plant account upon completion of the project. As a result, a meaningful analysis of O&M expenses or capital expenditures for management purposes cannot be efficiently or effectively performed.

PAWC's current capital construction program, which includes the existing facilities' expansion plans, is included in the PAWC capital budget. A review of the PAWC capital-budget data, as included in the latest approved version (Q2) of the company's 2007–2011 Strategic Capital Expenditure Plan (SCEP) dated June 13, 2007, was not able to determine the amount of money that was budgeted specifically for land and facilities acquisitions. Rather, the data was presented on a cumulative project basis.

Major Processes and Systems

In other utility organizations, frequently a centralized real estate and facilities group is responsible for activities such as acquisition and disposal of holdings, managing revenues associated with lease or sale activities, and management and/or oversight of any maintenance work (ongoing and project work) associated with land and buildings. Centralization of this function generally allows a utility to ensure that activities are performed when appropriate and in a cost efficient manner. For example, decisions as to use of internal versus external resources can be more effectively performed when looking at the whole picture. In addition, use of a work management system allows a utility to determine the proper mix of preventive versus reactive maintenance work. Having such a group also allows professional project managers to perform oversight of major projects to ensure timely and quality completion within budgets. However, due to the lack of a group that is responsible for the facilities and property management function at PAWC or American Water, there are no major processes or systems that are used in relation to this function.

Metrics

Many different performance metrics can be used by a utility organization, depending on the focus of its facilities and property management function. Some examples noted by Schumaker & Company consultants in past audits include financial management metrics (O&M versus budget, capital expenditures versus budget, cost per square foot (office/non-office), revenue, and others) and operational execution/system reliability metrics (customer satisfaction, % of work planned, scheduled work completed, meeting acquisition or disposal dates in strategic plan, and others). Due to the lack of a group that is responsible for the facilities and property management function, there are no metrics that are recorded and monitored at PAWC or American Water in relation to this function.

Findings & Conclusions

Finding IV-20 **There is no integrated Facilities and Property Management group at either American Water or at PAWC.**

The lack of this dedicated Facilities and Property Management group results in these activities being performed in varying ways and with no overriding standards. The decision on how to conduct the included activities is up to the judgment of the various employees who are assigned to handle specific functions, with very little in the way of standardized policies and procedures to guide the activities. It should be noted that none of these employees is a professional property manager. This oversight can result in a significant variation in the results that are achieved. Additionally, because PAWC does not have a department that is assigned the responsibility of managing and controlling the facilities and property management functions, there are no specific budgets for these activities. Moreover, there are no actual and capital expenditures that are captured by PAWC in a manner that permits such data to be readily available to serve as a management tool. This oversight makes the analysis of the efficiency and cost-effectiveness of such activities impossible to judge.

Finding IV-21 **There are no formal policies and procedures to guide the performance of the facilities and properties management function at PAWC or at American Water.**

There are no standardized policies and procedures to guide the everyday conduct of the facilities and properties management function at PAWC. The only procedures that exist are in relation to the acquisition of property or facilities through the CDC or CIMC, which are generic investment policies, not facilities and property management guidelines.

Recommendations

Recommendation IV-19 **Establish a single point of responsibility for the facilities and properties management function at PAWC. (Refer to Finding IV-2.)**

The position of Facilities and Property Manager should be established at PAWC to ensure a singular point of focus and standardization for these activities. Assigning this role would ensure that all of the included activities are performed to an established standard, rather than being based on the judgment of the various employees who are assigned to handle these tasks.



Recommendation IV-20 **Develop a set of formal policies and procedures to guide the performance of the facilities and properties management function at PAWC and American Water. (Refer to Finding IV-14.)**

A formal set of facilities and properties management policies and procedures would ensure that all of the included activities are performed to an established standard and are consistent with each other across PAWC. This standardization would serve to validate that the activities performed in this regard were cost-effective and in the best overall interests of the PAWC ratepayers.

D. Procurement Services and Materials Management

This section provides a discussion of the procurement services and materials management services provided by either American Water Works Service Company (AWWSC) or Pennsylvania-American Water Company (PAWC) in relation to the material, supplies, and services that are used by PAWC in the course of its daily operations. Because the procurement services and materials management services at AWWSC and PAWC are two totally separate functions, rather than being integrated into the same organization as is found at most utilities, this section of the report is divided into two distinct segments, with one devoted to each function.

Procurement Services

Background & Perspective

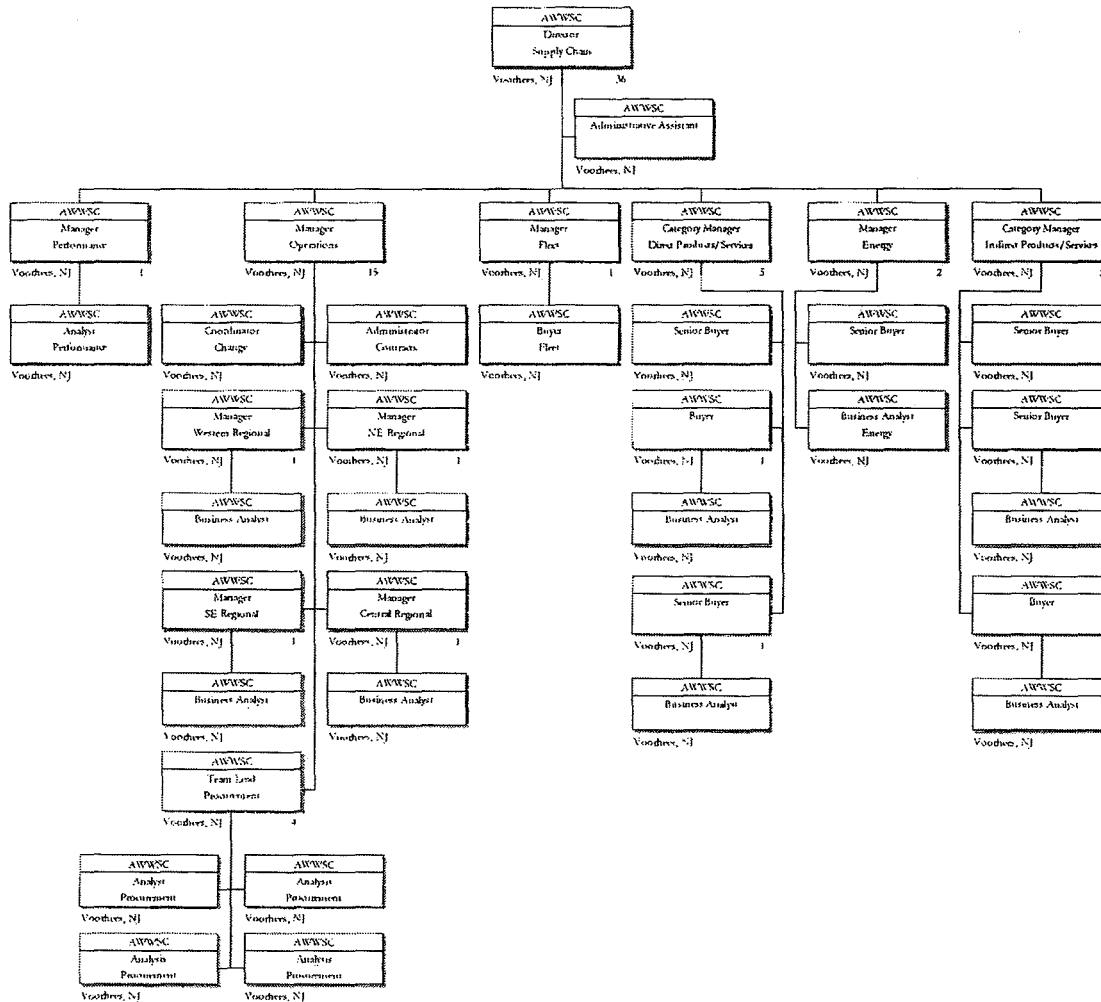
Organization & Staffing

The AWWSC Supply Chain (SC) group was approved by the AWWSC executive management team (EMT) in December 2003 and staffing began 2004. It is currently considered by American Water management to be primarily a strategic sourcing group. The SC organization originally included an AWWSC Inventory Management group until 2006, when that group was disbanded and the inventory management function transferred to the state-operating companies. This transfer was done based on a decision made by the presidents of the regions to pull the inventory function back into the individual operating companies. The operations regional managers for the state-operating companies focus more on local purchases than regional sourcing, for which the SC group is responsible.

The SC organization at AWWSC is composed of several functional groups. This organization is presented in *Exhibit IV-30* and described in the text that follows.



Exhibit IV-30
Supply Chain Organization
as of December 31, 2007



Source: Information Response 1

- ◆ The Category Manager Direct Products and Services, the Category Manager Indirect Products and Services, and their organizations are tasked with carrying out the strategic supply function. The strategic supply function is responsible for the identification of potential sources of supply, monitoring the timing of purchases, and the attainment of supplier diversity objectives.
- ◆ The Operations group is responsible for assisting other SC groups with their daily operations and internal workings. This group is subdivided into two general functions, those being:

- The Procurement group is responsible for the development of procurement contracts with vendors. Additionally, the group performs supplier address-book updates in the JD Edwards (JDE) system and validates that this information is accurate, correcting it as required. The group reviews the pricing of all purchase orders (POs) and validates them before they are transmitted to the vendors. The group also produces an Open POs report on a monthly basis and performs PO training for field personnel to ensure that the proper procedures are followed. In addition, the group produces reports on inaccurate POs and vendor address-book additions. In those situations where an inaccurate PO is identified, it is corrected and sent back to the Field Operations group that originated it for new approvals. Such PO problems are generally attributable to the use of inactive suppliers or incorrect prices. In the AWWSC Procurement group there are two primary categories of employees, those being:
 - *Category Managers* – responsible for obtaining items that are of the best quality with the best service at the best price for American Water operating companies for all products and services that are purchased
 - *Buyers* – responsible for setting up contracts, administering contracts, monitoring on-time delivery of purchased products, etc.
- The four Regional Managers in the Operations group along with their support staffs are responsible for the following primary functions:
 - Focusing on contracts that are sourced on a local basis such as those for paving, dealing with residuals, and operations and maintenance (O&M) that are not covered under national contracts.
 - Obtaining feedback from the field operations personnel as to what equipment is in place and who is used for service provision of this equipment.
- ◆ The Performance Management group produces the budgeting forecast, quarterly reforecasts, volume reporting, and other data reporting as related to the procurement function.
- ◆ The Fleet Management group is responsible for managing the overall fleet management function for all American Water companies. American Water has outsourced a majority of this function to an external contractor, Automotive Resources International (ARI). The AWWSC Fleet Manager meets with ARI representatives on a quarterly basis to discuss the service level agreement (SLA) performance results for the previous quarter. On a regular basis, the AWWSC Fleet Manager meets with the operations people in the field and sometimes takes representatives of ARI with him. ARI does produce annual benchmarking studies that are relevant to the various services it provides to AWWSC. More details on the functions of this group can be found in this chapter's *Transportation and Fleet Management* section.
- ◆ The Energy Manager reviews energy costs and attempts to identify ways to reduce them. He is also responsible for performing energy audits of various American Water facilities, again with the intention of identifying means to reduce energy costs.



In relation to the procurement activities on behalf of PAWC, a Southeastern Regional Manager in the SC Operations group is designated by the American Water state-operating companies of the Southeastern Region as being responsible for purchasing. As such, this person is responsible for overseeing the SC activities in six Southeastern Region state-operating companies. A key objective of this position is to better align the business needs of the operating companies with the AWWSC procurement process. His primary responsibilities include the following:

- ◆ Focusing on the viability of those contracts that are sourced on a local basis, typically such as those for paving, dealing with residuals, and O&M work. These contracts are usually relatively small local ones that are not covered under national contracts. This responsibility includes monitoring the status of these localized contracts for potential problems with performance and for expiration dates to ensure that they are renewed in a timely fashion. The Southeastern Regional Manager also provides some guidance to the PAWC Field Operations groups in relation to using national contracts (as required).
- ◆ Attempting to identify those local contracts that could be bundled into state-wide or national contracts. Major areas of procurement (referred to as spend areas) of the business have been established previously by product code and by suppliers. When the Southeastern Regional Manager identifies an area of opportunity, he will attempt to aggregate the needs across the various districts of the state-operating company. This aggregation is intended to reduce both the number of vendors and the cost of the product based on a greater volume of sales. He is also responsible for obtaining feedback from the Field Operations personnel on what equipment is in place and who is used for service provision of this equipment. While the SC group drives the contract-development process, the local operations management personnel have their input into contract-related decisions.

Most of the national contracts with vendors are master service agreements that last for two years, but this duration can vary. A strategy meeting is held with all of the SC organization managers in attendance to discuss each new contract that is to be established.

The SC Southeastern Regional Manager employs the AWWSC standardized seven-step process for developing new contracts, with the primary steps being the identification of an opportunity, the formation of a team to identify the available vendors, the development of the request for proposal (RFP), and the selection process. The final decision is made by the operating company with input from the SC Southeastern Regional Manager.

The seven-step strategic sourcing process, as used by the AWWSC SC organization, is as follows:

1. *Assess Opportunities* – Prior to initiating a strategic sourcing project, an assessment is conducted to identify sourcing categories and to estimate potential savings. The intention of this step is to identify the procurement categories for which the implementation of a strategic sourcing methodology may be applicable.

2. *Profile Category* – After identifying the categories to be strategically sourced, the second step, Profile Category, involves a detailed internal and external analysis to understand a category from market, vendor, and internal perspectives.
3. *Develop Strategy* – Once the Category Profile analyses have been completed, the appropriate category-specific sourcing strategy is developed. This task is accomplished through the development of a best-fit, category-specific strategy that will achieve the lowest total cost.
4. *Qualify Vendors* – After sourcing strategies have been developed, vendors must be qualified to ensure that they can meet the defined procurement requirements. This step is performed with the intention of narrowing down the list to a short list of possible vendors that best meet the specified requirements.
5. *Execute RFP/Selection* – Once the short list has been determined, a request for proposal is formulated to support the detailed evaluation and selection process. The intention is to provide an “apples-to-apples” format that would assist in the identification of those vendors that would be suitable for the negotiation process.
6. *Negotiate Agreement* – After analyzing the submitted responses to the RFPs to determine which vendor best meets the specified requirements, specific strategies are developed for negotiating with that vendor. The intention is to achieve a formal agreement in a “win-win” situation that allows both parties to see marked improvements in their ability to conduct business.
7. *Implement Category Plan* – After completing the agreement, the implementation process must be managed to ensure that changes are effectively introduced into the organization. This oversight will ensure that the agreements are fully utilized and that internal customers understand the changes and the implications of the developed sourcing methodology.

For example, in September 2007 the Southeastern Regional Manager was reviewing the grounds-keeping contracts for PAWC districts because they were scheduled to expire in the near future. After he identified the available suppliers, a scope of work was developed that became part of the standardized RFP document. The work plan was then developed and approved by the appropriate managers in the SC group and the designated PAWC Category Lead who is responsible for this function (who, in the case of lawn maintenance, would be the PAWC Network Manager).

Pre-qualification of vendors to be included in the various bidding processes, including both requests for proposals (RFPs, generally used for services) and requests for quotations (RFQs, generally used for material purchases) processes, is typically accomplished through the use of work experience questionnaires (WEQs). Review of vendor-submitted responses to a WEQ is used to determine whether a vendor is to be included in a bidding, RFP, or RFQ process. Once pre-qualified, vendors will submit bids, proposals, or quotes in a sealed bid or electronic format as prescribed in bid documents.

The received responses to RFPs are analyzed by a designated team that is composed of operating company personnel who are directly involved with the function. The Southeastern Regional Manager summarizes the received bids to facilitate this evaluation and selection process. The evaluation is done



primarily on the basis of the contact's cost, the range of services offered, and the quality of such services. Once a selection is made, negotiation is initiated with the selected bidder based on any number of identified issues. The majority of the time, the contract is awarded to the lowest bidder—it is relatively unusual to select other bids. The selection team tries to evaluate the quality of the bidder's service or product offerings up front in the selection process. That way, they can make sure that no unqualified bidders are included in the evaluation process. Time is then spent reviewing the responses to the RFP questions that relate to work experience, personnel resources, safety, and the financial status of the bidders.

AWWSC reserves the right to select vendors based solely on bid, RFP, or RFQ information provided, to conduct discussions, or to request proposal revisions, if deemed necessary. The vendor that is awarded the bid will be chosen on the basis of which one would potentially provide the greatest anticipated overall benefit to the operating companies of American Water. AWWSC reserves the right to have no obligation to reveal to the bidding firms how vendor proposals were assessed. Schumaker & Company consultants performed a review of the documentation related to the bidder evaluation and selection process. This review revealed that a sufficient amount of data and detail is included in the process to allow for a proper selection to be made. Additionally, a process to include adequate purchasing-approval authority documentation is included in the vendor evaluation process.

The next step in the vendor-selection process involves finalizing the contract. This phase usually consists of a standardized contract with an attached scope of work, prices, and terms and conditions that are specific to the subject contract. The final contract must be approved by the following groups or individuals: the AWWSC Legal Department, the AWWSC Finance Department, the contract signer (frequently the Network Manager from the state-operating company), and the SC Southeastern Regional Manager. The approved contract is then sent to the winning vendor for its signature.

The SC Southeastern Regional Manager normally has four to 10 contracts in the works at any given time, with some being small and others large. As an example, for lawn maintenance, PAWC had approximately 18 vendors that would be contracted with (due to the localized nature of the lawn maintenance business).

The Southeastern Regional Manager also has responsibilities in relation to the American Water supplier diversity program. He documents diversity activities for his designated state companies in strategy documents. His personal key performance indicators (KPIs) state that every new purchase that is put out to bid (referred to as supplier events) must attempt to include a minority vendor. If this effort is unsuccessful, the attempts made are documented, including the reasons why it was not possible to include a minority vendor. The Southeastern Regional Manager was responsible for the development of the PAWC diversity document for 2006. Minority vendors must be price competitive. There is no advantage given to minority vendors in the bidding process. More information on the vendor diversity process is included in *Chapter IX – Diversity & EEO*.

Other activities in which the Southeastern Regional Manager is involved include the following:

- ◆ Supplier management and maintenance function, which includes working with the suppliers to ensure that the established agreements are followed.
- ◆ Identifying new opportunities for contract development.
- ◆ Addressing issues of vendor non-performance – In these situations, he is responsible for communication with the supplier (including on national contracts). He tries to resolve the problems by working with the vendor. He has the authority to release the vendor if it is not performing to the established specifications.
- ◆ Reviewing and addressing non-compliance spend, which deals primarily with Field Operations groups that are not using the established national contracts – He reviews the monthly non-compliance reports for problems and would address them when identified.
- ◆ Sign-offs on the contract approval form for local contracts only.
- ◆ Attempting to get out into the field on a regular basis to talk to the customer businesses about their needs and problems – On these trips, he meets primarily with the field superintendents and supervisors.

Under the applicable SLA requirements for the American Water operating companies, as an aggregate, various primary vendors are responsible for providing monthly reports on their performance. For example, in the fleet function the vendor (ARI) produces reports that detail its performance in the following functional areas:

- ◆ Fleet size
- ◆ Average speed of answer
- ◆ Vehicles ordered
- ◆ Vehicles delivered
- ◆ Fuel purchasing volumes
- ◆ Maintenance and repair spend by region
- ◆ Summary statistics on the savings achieved
- ◆ Specific data on the vendor's results in meeting the key performance indicators included in the SLA, including:
 - Customer service
 - Material issuance
 - Vehicle remarketing
 - Major component issues



The SC group aggregates these individual vendor SLAs into aggregate reports for the overall SC function. These reports are produced on a quarterly basis.

As of 2007, there were 1,049 American Water product codes that provide assistance in identifying purchased products by category. These finer gradation product codes are aggregated into product categories that include products of a similar nature or use. A sampling of typical product categories includes the following:

- ◆ Water treatment chemicals
- ◆ Water infrastructure
- ◆ Tools and small equipment
- ◆ Storage tanks
- ◆ Professional services
- ◆ Pipe and fittings
- ◆ Outside legal services
- ◆ Meters
- ◆ Instrumentation
- ◆ Fleet
- ◆ Facilities maintenance
- ◆ Electrical
- ◆ Chemical feed
- ◆ Administration and general

The Commodity Report is published in April of each year and is updated in June and November by the SC group. This document is a research report that is intended to provide an internal analysis of the market demand and price trends for various commodities that are purchased on a regular basis by American Water state-operating companies. It also includes an assessment as to how these commodities will affect various designated procurement categories. This research information is provided to assist in the forecasting of budget requirements for the various designated categories. The report includes a brief summary of projections and recommendations on how specific commodity categories with historically high spend levels will be affected by market changes.

Additionally, the Commodity Report contains more detailed information on the predicted market trends for nine selected commodities. These commodities were selected for a higher level of analysis based on their potential impact on the products and services purchased by American Water state-operating companies. These commodities typically exhibit high volatility in the marketplace and, as such, can have a significant impact on budget forecasts in the short-term future. Included in this analysis are evaluations of supply and demand, future price projections, worldwide market news and trends, and an update of the existing market for the commodity. These nine selected commodities include the following:

- ◆ Chlorine
- ◆ Copper

- ◆ Crude Oil
- ◆ Electricity
- ◆ Labor
- ◆ Natural Gas
- ◆ Pulp/Paper
- ◆ Scrap Iron
- ◆ Steel

The Supplier Quality Report is used by the SC group to document problems with all supplier performance, or with non-conformance to either specification requirements or a service level agreement (SLA). The document also serves to notify the supplier of the problem and to advise that an investigation is to be initiated to determine the root cause of the problem. It then serves as the basis in developing the proper corrective action to avoid a recurrence of the situation. The supplier must reply in writing, utilizing the report, with the solution to the problem. No formal vendor-performance postmortems are performed other than the above-listed reports.

Vendor Scorecard Reports are produced by the SC group with the intention of providing performance ratings of selected vendors. These standardized scorecards rate the selected vendors based on 11 evaluation criteria, those being:

- ◆ *Customer Support* – response time/rate (timely, courteous, capable) and technical support capabilities
- ◆ *Accuracy* – delivery is complete per order (size, quantity, type)
- ◆ *Non-quality Returns* – efficient processing of non-compliant goods
- ◆ *Delivery Performance* – deliveries to date and time specified and agreed upon
- ◆ *Presentation* – packaged and labeled according to specifications and delivered in good condition
- ◆ *Packaging/ Documentation Requirements* – correct bar codes, packing slips, presort, grouping, invoicing, etc.
- ◆ *Communications* – reports, delivery status, product recalls
- ◆ *Quality* – adherence to quality standards established by the Category Managers
- ◆ *Capabilities* – sufficient production capabilities to meet planned demand
- ◆ *Product Innovation* – introduction and implementation of the use of new products
- ◆ *Product Value* – meeting the overall expectation for the products

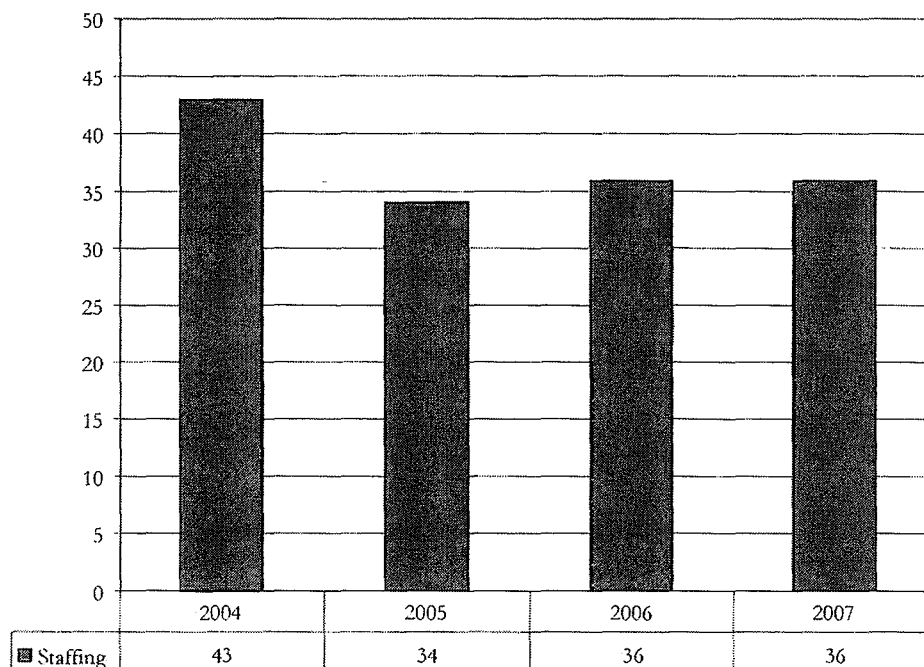
These individual criteria ratings are then aggregated into a summary rating for that vendor.



Staffing Levels

PAWC does not have its own supply chain function; therefore, there are no actual or budgeted positions within PAWC. Instead supply chain services are provided to PAWC by the AWWSC Supply Chain group, whose staffing levels for 2004 to 2007 are shown in *Exhibit IV-31*.

Exhibit IV-31
AWWSC Supply Chain Staffing Levels
2004 to 2007



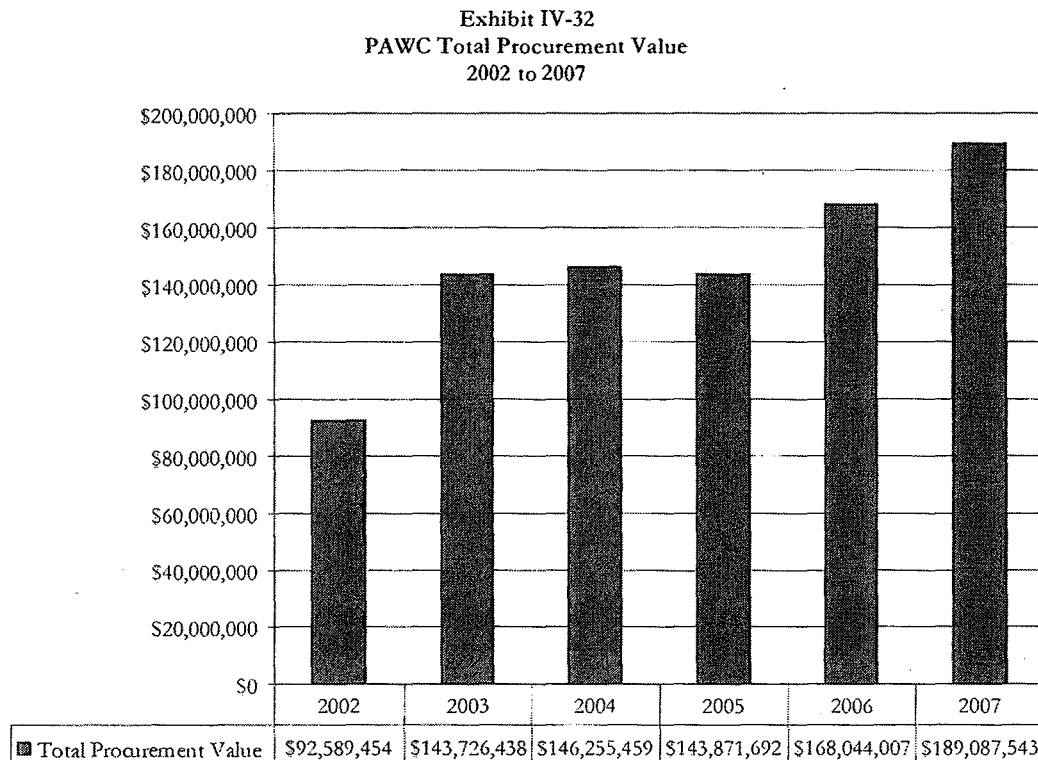
Source: Information Response 852

The SC staffing levels dropped by nine in May 2005 from 43 to 34. After reviewing internal control requirements defined by Sarbanes-Oxley (SOX), AWWSC determined that the accounts payable function should no longer be located within the same organizational structure as strategic sourcing function. Consequently, the accounts payable function was transferred from the Supply Chain group to the Shared Services financial group. In 2006, two Procurement Analyst positions were added to comply with procurement-to-pay (P2P) SOX remediation.

Expenditures

Because PAWC does not have its own supply chain function, no budget or actual-to-budget operating expense data is available at the state level for a supply chain function. The only budgeting the AWWSC

SC group does is related to the group's annual salaries and other operating expenses. It does not specifically budget state purchases. Instead, annual budgeting for purchases is done by the field forces in each of the state-operating companies. It is based on aggregated forecasts, for example, of how much ductile iron pipe would be required over the course of the coming year. *Exhibit IV-32* illustrates PAWC's total procurement value (purchases) for 2002 to 2007.



Source: Information Response 834

Major Business Processes

Representatives of the SC group communicate with vendors on a regular basis. A Supplier Complaint Log is used to track all complaints that are made against vendors. However, there is no report of vendor problems that is automatically generated by the JDE procurement software. There is an online Supplier Complaint Report (SCR) form that is filled out by operations personnel in the field to report problems with vendors. This form contains information on the problems that were encountered, including:

- ◆ Information on the employee who reported the problem
- ◆ Details of the problem

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- ◆ The supplier name
- ◆ Proposed action to be taken to resolve the problem
- ◆ Status of the complaint's resolution

The SC group has conducted surveys of its customers in the Field Operations groups to obtain additional input. The Vice President of the SC group makes it a practice to visit regional sites once a year to have face-to-face meetings with the field representatives.

The SC group reviews the cost drivers for its vendors. Such drivers include the cost of purchased scrap iron, which is a major component of the vendor's cost for producing ductile iron pipe.

A monthly cost savings report, which includes the following items, is produced on the cost savings generated by the SC group in relation to the procurement process.

- ◆ *Procurement performance* – the difference between the price paid by American Water and the average price of the bids that were received for the item.
- ◆ *Purchasing results* – a comparison of the old price for the material versus the new price for the material, with no adjustment for market conditions and with the goal of beating the consumer price index (CPI).
- ◆ *Return on investment (ROI)* – For the SC group, a comparison of the costs of operating the group with the resultant cost savings obtained by that group.

It is the objective of the AWWSC SC group to put as much of the purchasing as possible under national (blanket) contracts, which this group is responsible for establishing. It is believed that because of the volume purchasing discounts that can be achieved under national contracts, item and material costs can be driven to lower levels. A quarterly report is produced by the SC group on the total sourceable spend incurred for each month versus the amount covered by national agreements. Spend data is not routinely published at the state-operating company level. Rather, the reports are produced at the regional and American Water levels. These reports show the amount of dollars spent under national contracts as a percentage of the total sourceable spend dollars for the business unit. The data for 2007 shows this usage of national contracts to be 81% for PAWC; the SC group has a target of 71% to 75%. On a quarterly basis, these compliance reports are sent to the operations managers who are responsible for compliance in the field. The intention of this undertaking is to increase the use of national contracts.

The SC group attempts to identify new opportunities for the sourcing of additional items that could be included under national contracts. The compliance reports identify those areas where the national contracts are not being used to their fullest extent.

In relation to the quality of the material purchased, the individual state-operating companies develop their own product specifications, a function that is normally performed by the Engineering groups. The state-operating company personnel in the field who receive the material into inventory are responsible for determining and verifying the quality of that material. If the material is damaged, the receiving

personnel would return it to the subject vendor without any involvement on the part of the SC group. The SC group would only become involved in those situations of very large or systemic problems.

There are two general categories of purchased materials in the AWWSC SC group, those being:

- ◆ Direct materials are defined as products that come into contact with water in the process of treating it or delivering it to the customer, including the chemicals that are used.
- ◆ Indirect materials are defined as purchases that do not come into contact with water, which include such categories as legal, uniforms, consulting, temporary labor, information technology, communications, office supplies, etc. At the end of 2005, the SC group implemented commodity codes that enabled them to better track procurement volumes.

An example of the steps involved in a typical purchasing process for a state-operating company includes the following:

- ◆ The Field Operations organization would issue a PO and it would be approved in accordance with the established PO approval process.
- ◆ This PO would go directly to the vendor under a national contract.
- ◆ The buyer would get involved only if there were a problem with the purchase or the price.

On the AWWSC internal intranet site are listings of the preferred vendors with established national contracts, including a buyer's guide and pricing list. If a specific item is not listed on the intranet site, the Field organization either calls an AWWSC buyer for assistance or sources it locally. The contracts with the preferred national suppliers are not exclusive contracts. American Water operating companies have the right to purchase items from other vendors (with no approval required from the SC group) without violating the terms of the contracts.

Each of the SC buyers receives a monthly report of the amount that is purchased from preferred suppliers under national contracts versus the quantity that is purchased from non-preferred suppliers. The buyer checks for situations of significant use of non-preferred vendors and, in such cases, would question the originator of the PO. The buyer also uses this information to identify opportunities for additional sourcing under national contracts.

The buyers do not receive monthly reports on vendor performance. However, vendor performance surveys are sent out to the field on an annual basis to obtain field input on current suppliers.

Major Systems

The primary software application used by the SC group is the JDE Enterprise Resource Planning (ERP) procurement module running on an AS400. The JDE software version that is being used is from 1996. The AWWSC SC group uses the JDE procurement module, but it does not use the accompanying distribution requirements planning (DRP) module for the materials management function. The



AWWSC Inventory Committee is currently working on how to implement and use the JDE DRP module to the greatest benefit at American Water state-operating companies.

AWWSC and representatives of the operating companies participated in an American Water program, with the purpose of studying and evaluating how to implement the SAP ERP package at all of the American Water companies. The decision had already been made to go with SAP as it was the package used in Europe by RWE. The group had finished the flowcharting of the processes when the project was called off because of the divestiture announcement from RWE earlier in 2007.

The AWWSC SC group has built and maintains an internal intranet website. This website is available to any state-operating company employee with the proper security clearance. This website includes, among others, the following data reports:

- ◆ American Water's seven-step strategic sourcing process
- ◆ A listing of new suppliers that have been added to the supplier master list
- ◆ Supplier complaint log
- ◆ Supplier quality report
- ◆ Purchase orders issue report
- ◆ Supplier management reporting log

Diversity databases and the Internet are used by AWWSC SC personnel to attempt to identify available minority vendors so that these vendors might be offered the opportunity to participate in the bidding process for contracts with AWWSC. There is an American Water Supplier Diversity policy that states that minority vendors are to be included in the process for each sourcing event (which is defined as any time new bids are solicited for an item). The SC group tracks how many minority vendors were included in each bidder pool and how many were successful. SC representatives also attend purchasing fairs and expositions with the specific intention of identifying new minority vendors. The individual buyers each have KPIs as part of their performance assessment process. These KPIs evaluate the results that were achieved in relation to increasing the diversity of suppliers. The SC group also surveys existing suppliers to gain information on those suppliers' own internal diversity programs. However, this data has proven to be hard to collect because many of the vendors do not gather such information.

At the national level, it has proven to be difficult to find diverse suppliers because of the size of the national contracts and the amount of materials that is purchased. For example, pipe suppliers must be very large for them to be able to fulfill the overall requirements of the American Water state-operating companies.

Findings & Conclusions

Finding IV-22 The current procurement module of the ERP system is 12 years old and lacks significant amounts of capability that would be expected from a state-of-the-art current application.

As with most computer technology, great strides have been made in the capability and speed of the ERP procurement technology in the past 12 years. Capability and functionality have been significantly enhanced thanks to improved software designs and more powerful hardware. Most importantly, current procurement applications take full advantage of the greater efficiencies that are offered by the use of the Internet for procurement purposes. Such Internet-capable applications can greatly improve the efficiency and speed with which the procurement process takes place. At the same time, they can provide for much greater availability of relevant data and statistics. An additional benefit is that these applications allow for a significant reduction in the amount of paper that has to be generated and dealt with. e-Procurement, as it is called, is definitely the wave of the future. Implementation of a robust procurement system that would avoid such tasks as the production of paper POs would improve and expedite the procurement process. However, due to a lack of applicable data, a quantification of these savings would not be valid. The AWWSC Procurement group is currently doing too much manual work, which cuts down on the time that is available for performing strategic-sourcing-related tasks.

Additionally, a contemporary ERP procurement application would be seamlessly integrated with the materials management/inventory module, thereby allowing for direct transfers of data between the two systems. For example, when the inventory module detected an item in a storeroom that had fallen to a stock level below its predetermined minimum level, it would, through the procurement module, develop a recommended requisition order. This order could then be approved by the proper company employee(s). This approval process would automatically generate a PO, which would be electronically placed with the designated vendor. The process requires no paper and is very efficient and expeditious. The current procurement application that is in place at PAWC and AWWSC has this functionality, but it has never been implemented at PAWC or AWWSC.

Finding IV-23 The use of preferred suppliers under national contracts is not mandated and likely is having a negative financial implications for the operating companies as a result of not maximizing the use of suppliers that have been subjected to a bidding and negotiation process.

Currently, the use of national contracts for purchasing equipment and supplies is basically a voluntary practice. Neither the contracts with the vendors nor AWWSC procedures require that state-operating companies, which perform the actual purchasing transactions, make use of the established national contracts. Because these national contracts are the result of a formal bidding, evaluation, and selection process, which is heavily based on pricing of the required items, it can be assumed that the prices included in the contracts are very competitive in relation to the marketplace. Using vendors other than these preferred vendors does not take advantage of this bidding/negotiation process. Therefore, the



resulting prices could be higher than those that are included in the national contract. Most companies, both utilities and other types of firms, require that their operating organizations purchase items only under their blanket contracts, with the exception of emergency or time-critical situations. Not doing so negates the advantages gained from a larger company-wide contract, especially in terms of pricing. Additionally, use of national contracts allows for enhanced monitoring of vendor performance and for more expeditious resolution of the problems that are identified.

Finding IV-24 The lack of PAWC-specific data that is collected in relation to the procurement function renders it difficult for the PAWC management to evaluate and assess the effectiveness of that function's performance at PAWC.

The vast majority of the data that is collected by the AWWSC SC group is aggregated on either an American Water or regional basis. Relatively little data that is reported on is specific to the state-operating companies such as PAWC. This aggregation of data "averages out" the performance results and would not readily identify operational problems that were specific to a state-operating company. Moreover, a company such as PAWC would have a difficult time in performing an assessment of the operational efficiency and effectiveness of the procurement function that is specific to its localized operations. The relevant raw data appears to be available through the existing data-collection systems; it is just the presentation format that limits its usefulness. Such modifications in the reporting should not be very difficult to implement and could result in large benefits to the state-operating companies through their ability to identify and resolve operational problems and/or process efficiency and effectiveness deficiencies.

Recommendations

Recommendation IV-21 Initiate a software identification, selection, and evaluation process for a new integrated procurement/materials management application. (Refer to Finding IV-22)

Numerous vendors offer very robust procurement/materials management applications that run on the latest and most powerful technology. The task is to determine which of the applications is the best fit for the specific requirements presented by the American Water state-operating companies. Even among the various companies, there will be differences in requirements. As such, an application will have to be found that will be able to adequately address all of the various needs. In some cases, the business processes of the individual companies may need to be modified, but this situation typically arises in an ERP implementation project. Representatives of AWWSC and the state-operating companies already have recent experience in this process through the Standardized Technology Enabled Processes (STEP) program. This program was conducted to evaluate the implementation process for the SAP software package.

Recommendation IV-22 Evaluate in detail the impacts of not mandating the use of national contracts with preferred vendors by the state-operating companies, especially in terms of the financial impacts, and determine whether mandating this practice would be beneficial to the operating companies. (Refer to Finding IV-2.)

As stated previously, most utilities require that their operating groups purchase items only under their blanket contracts, with the exception of emergency or time-critical situations. The reasons for this mandate are to standardize the purchasing process and to take maximum advantage of the prices that are negotiated under these contracts. The use of the national blanket contracts is not voluntary, but rather mandatory. AWWSC needs to work toward getting to this methodology of doing business. PAWC reports that compliance with the use of national vendors for purchased items that are under national contracts is 93.3%. However, PAWC also reports that compliance with the use of national contracts for all purchases (for both those items that are under national contracts and those that are not) is at 81%. This percentage could be improved, thereby resulting in financial benefits to PAWC (through mechanisms such as volume pricing discounts). Not doing so results in a failure to take advantage of the work of the SC group in obtaining the best possible prices with reliable vendors that can meet their commitments. Because of the nature of the various state-operating companies, including PAWC, some flexibility needs to be included in the policy for including lower cost alternatives. In a company that is as operationally and geographically diverse as PAWC, special considerations may have to be given to certain parts of the company operations. These situations, however, should be the limited exceptions and should include a bidding process where possible (i.e., a preset price for emergency assistance). The recommended review should also be used as an opportunity to identify those specific material purchasing situations that do not have established national contracts but should for reasons of cost efficiency. A focus could then be put on establishing such national contracts for these identified material purchases.

Recommendation IV-23 Initiate a study to determine how best to present the operational and performance data on a state company basis and to evaluate the potential benefits of such reporting changes. (Refer to Finding IV-24.)

The ability to easily review operational performance data and results on a state-operating company-specific basis would result in a better ability on the part of the individual companies' (such as PAWC) management to evaluate the effectiveness of these operations in their state. This facility would apply to both the operations that are conducted within the state-operating companies as well as those that are performed for them by the AWWSC SC group. Such data would give the respective managers of the state-operating company more state-operations-specific data. This information could then be used as the basis for making informed decisions concerning the operations of the state company.



Materials Management

Background & Perspective

Organization & Staffing

As of the end of December 2007, there is no designated Inventory or Materials Management group at either AWWSC or at PAWC. The Supply Chain (SC) organization originally included an AWWSC Inventory Management group until 2006 when that group was disbanded and the inventory management function was transferred to the state-operating companies. This transfer was done based on a decision made by the presidents of the regions to pull the inventory function back into the individual operating companies. At PAWC, certain operations supervisors are designated to be in charge of their storeroom's inventory function. There are 31 storerooms that are maintained by PAWC.

Expenditures

Due to the fact that there is no centralized inventory management function at PAWC, there were no available costs or expenditures associated with the operations of a Materials Management group. The costs associated with the personnel who participate in the materials management function are recorded as normal operating expenses for the operations department of which they are a part.

Major Business Processes

Because of the past lack of centralization and leadership in the materials management function at American Water operating companies, including PAWC, there were no standardized procedures and processes that were used across the company. Rather, it has been the designated responsibility of each storeroom to maintain its inventory in the manner that it sees as being proper. An *Inventory Management Strategy* for the American Water System was adopted on November 21, 2007. However, as it was explained to Schumaker & Company consultants, it is a strategy document, not detailed policies and procedures as are required for standardization of operations. Also it remains to be seen if this strategy will be enforced at all of the PAWC storerooms.

The only area where there is some company-wide standardization of inventory procedures is in relation to the designation of items that are in inventory. Inventory part-type classifications include:

- ♦ *Stocked parts* – inventoried parts or supplies that are used on a regular basis.
- ♦ *Expensed items* -- primarily maintenance items that are not tracked in the inventory system and are not included in the calculations that are done in relation to inventory turns.

Within the stocked parts category, there are three stock types that are used in the PAWC materials management system, those being:

- ◆ Stock C parts – These are chemicals that are inventoried.
- ◆ Stock D parts – This category is used for fuel.
- ◆ *Stock E parts* – These are inventoried parts that are used on a regular basis. These items are tracked in the inventory system and are included in the inventory turns calculations.

Maintenance of the Parts Master File is the responsibility of the Fixed Assets (FA) group at AWWSC. The FA group is responsible for the following materials-management-related tasks:

- ◆ Updating of the Parts Master File to reflect changed part descriptions or specifications, which is done upon receipt of requests for updates from the operating companies.
- ◆ Setup of new parts in the Parts Master File, which again is done upon receipt of requests from the operating companies for new parts to be included.
- ◆ Coordination of the annual physical-inventory results and identification of the occurrence of significant variances that are to be investigated by the storekeepers in the field.
- ◆ Production of reports relating to the Parts Master File.

Strategic stock, sometimes called emergency stock, is defined as items that must be maintained in inventory despite very low usage rates. Such parts are long-lead-time, specialized items that would be required if an emergency repair were to be required. In the opinion of PAWC representatives, the potential exists for consolidating these items into fewer locations, thereby enabling a reduction in inventory levels.

A listing of surplus or obsolete inventory in each storeroom is no longer produced as it was when there was an Inventory Manager in charge of inventory management functions. Rather, employees now have to look at each individual storeroom to determine surplus levels. At PAWC, prior to 2007, an annual request was sent to the individual storerooms by one of the operations supervisors. This request asked for lists of obsolete items in each storeroom, but it is no longer done (due primarily to lack of time on the part of the person who previously initiated it).

At 2007 year-end there was no standardization of part numbers in AWWSC or in PAWC across the various storerooms. There is an established American Water Parts Number Cleanup Committee that is a subcommittee of the American Water Inventory Strategy group. This effort has been in process for about three years, and this committee has several established goals, including:

- ◆ Developing a standardized part-numbering system for use at all American Water operating companies.
- ◆ Making consensus decisions as to which items are to be classified as Stock E (inventoried items) versus maintenance items for American Water operating companies as a whole.
- ◆ Developing a standardized part-numbering scheme to be used for new items.



There is an ABCD inventory-classification system that is in use. The top 80% of items in terms of usage are classified as A items. B items comprise the next 15% in terms of usage. C items are defined as items that have not been used in that storeroom in the past 12 months, but that have been used elsewhere in the PAWC storeroom system during that timeframe. D items are classified as those that have not been used anywhere in the PAWC storeroom system in the past 12 months. This ABCD analysis is performed once or twice a year using the JDE procurement application by the AWWSC SC group.

Annual physical inventories are performed at each PAWC storeroom. The results are reviewed for apparent discrepancies by the Fixed Assets group at AWWSC. Some of the storerooms also perform informal cycle counts that are not adjusted for in the inventory database due to the existing software's lack of ability to permit daily inventory adjustments to be made. Rather, this cycle-count variance data is used to identify items that need to be ordered. That is because there is no automated reorder capability included in the JDE software that is used by PAWC.

A complete physical-inventory count of the Stock E items is performed in each storeroom at least once per year, typically between September and November. This inventory count is performed in coordination with the Fixed Assets group at AWWSC. Each storeroom has approximately a two-week window of time in which to perform the physical inventory. The Fixed Assets group notifies each storeroom of its scheduled window and the local field operations management selects a date during the cycle to perform the physical-inventory count. On the designated date, the storeroom stops all activity for the day, including physical receipt of deliveries, receipt of materials into the JDE application, and any issuance, transfers, or other movement of goods. The storeroom location assigns personnel to perform the physical count. The storerooms perform the physical-inventory count according to the "Field Inventory Cycle Count" manual.

The responsible PAWC employee at each storeroom logs into the JDE application and initiates the physical-inventory count procedure by creating a physical-inventory count number. A physical count sheet, which lists all of the parts with the description, is printed and distributed to the storeroom personnel. The quantity of each part in inventory is not listed on the physical count sheet. Rather, physical-inventory counts are performed "blind." The supervisor/storekeeper/assigned employee counts each part on his or her designated list, including materials on PAWC field operations trucks and vans, and enters the number counted next to each part number and description. This count is witnessed by an independent observer. After all of the parts have been counted and recorded on the physical count sheets, the physical count sheets are signed by the counters and forwarded to the responsible PAWC employee to be entered into the JDE system. Once the count numbers are entered into the JDE system, a variance report is produced from JDE. This report identifies differences between the physical count and the perpetual-inventory records.

The local field operations manager reviews the variance report, and the physical-inventory count team recounts parts that have significant unresolved differences to verify that their original count was accurate. These counts are performed with the perpetual-inventory quantities listed on the physical-inventory list. A PAWC employee then enters the adjusted counts into the JDE application. Remaining variances will be printed on a new variance report. The recounts may be repeated two or three times

until significant variances are resolved, if possible. The root cause of the remaining variances is researched and explanations are written on the variance report for significant remaining variances. The local field operations manager reviews and approves the final JDE variance report.

The designated PAWC employee enters the final inventory count numbers into JDE for those parts that were recounted. Once the physical-inventory count has been entered into the JDE application, the physical-inventory sheets and the approved variance reports are forwarded to the Fixed Assets group. This group is then responsible for posting the adjustments to the GL.

A physical cycle count of chemicals (stock C) is performed once per year, typically between September and November, in coordination with the Fixed Assets group. Each location that has chemicals is required to perform the cycle count according to the "Field Inventory Cycle Count" manual. Upon completion of this count, the results are forwarded to the Fixed Assets group for posting of the adjustments.

A physical count of fuel (Stock D) is performed monthly. PAWC has two locations that have fuel storage facilities, those being the service centers at Bethel and Hershey. Each location that has fuel is required to perform the cycle count according to the "Field Inventory Cycle Count" manual. Upon completion of this count, the results are forwarded to the Fixed Assets group for posting of the adjustments.

The physical movement of items in PAWC includes the following forms of transactions:

- ◆ Issuance of inventory to contractors
- ◆ Issuance of inventory to contractors' warehouses
- ◆ Issuance of inventory to PAWC employees for new construction, repairs, and maintenance
- ◆ Transfers between PAWC storerooms
- ◆ Chemicals transactions
- ◆ Fuel transactions

The following forms are used in the movement of materials and supplies at PAWC:

- ◆ *Materials Estimates Form* – This form contains the details of the scheduled work that is to be performed. The contractor or PAWC employee uses this form as guidance as to the details of the work that needs to be completed.
- ◆ *Tap Order Form* – Tap orders are used for new services installations. The tap order form contains the address where the work is to be performed, the G/L account coding for the work to be performed, a sketch of the work to be performed, and a list of the service materials and supplies that need to be issued for the job. Service materials and supplies are service parts that are used to connect a water line to a property (i.e., copper tubing, meter pit setting, etc.).
- ◆ *271 Form* – The 271 form contains a list of all inventory items charged from stock or returned to stock with the associated account coding for each material.



- ◆ *Contractor Invoices* – PAWC is invoiced by the various contractors based on the amount of work they have performed (i.e., feet of pipe installed).
- ◆ *Daily Job Sheets* – The job sheet contains detailed information of the work performed either by PAWC crews or contractors. It includes the amount of parts and material used by type and the date the work was performed. The PAWC Inspector completes this form and signs off on it.

The material usage and issuance data that is contained on these forms is entered into the JDE procurement module. This data is used to decrement (or replenish in the case of returns of material to the storeroom) the on-hand inventory balances that are included in the JDE database.

Materials are also issued to PAWC employees for new construction, repairs, and maintenance. Non-service materials are issued directly from inventory to a job or are expensed to maintenance. To return non-service material to the storeroom, a 271 form is prepared and is given to the designated reviewer and approver. Service materials can be issued from the storeroom or vehicle (rolling stock) directly to the job, or they can be expensed to maintenance depending on their use. When service material is maintained on PAWC vehicles, it remains part of the storeroom inventory in the JDE application until it is placed into use. Field Operations employees can replenish their trucks at any time by requesting service materials with a form, by making a verbal request of the storekeeper, or by retrieving the materials and supplies directly from the storeroom and filling out the requisite forms. At the conclusion of each service-installation job, when material is used from the vehicle rolling stock, the employee completes a stock issue form (Form 271 or tap order). This form indicates all of the materials used for the job as well as the associated accounting code for each item. The employee is required to sign the stock issue form and submit it to the designated PAWC reviewer and approver (this person would normally be a supervisor or inspector). The document(s) is then forwarded for review and entry into the JDE application to decrement the on-hand balance inventory.

After all tap order forms and 271 forms have been reviewed and approved, they are forwarded to the designated Field Operations group's administrative personnel for recording. The materials and supplies are not relieved from inventory or issued back into inventory until the administrative personnel member enters them into the JDE application. However, the policy at PAWC is that these orders are to be entered within five business days. As they are entered at only a few designated locations and the data must be transmitted to these locations, the entry of data that decrements the inventory is by no means timely and results in inaccuracies in the inventory on hand balance numbers. The administrative personnel member writes the issue or return document number on the 271 form and indicates the JDE document number. Such a notation serves as evidence that the goods transfer was entered into the JDE application. The issuing and receiving function is locked by the AWWSC's Fixed Assets group at month-end during the closing period, which lasts approximately three to five days. During this time, issuances and receipts are maintained until the beginning of the following month. The issuances and receipts can then be entered into the JDE application. The Fixed Assets group is responsible for performing the reconciliation of the perpetual inventory to G/L to verify that the goods movement has been properly recorded.

There are two types of materials transfers between storerooms, those being:

- ◆ Intra-company transfers are transactions that take place between PAWC storerooms. The intra-company transfer is authorized by e-mail from the requesting storeroom to the transferring storeroom. The transferring storeroom completes the 271 form and enters the transfer into the JDE application. It then ships the requested material. The requesting storeroom inspects the material upon receipt and, if material is refused, contacts the transferring storeroom.
- ◆ Inter-company transfers are transactions that take place between PAWC storerooms to/from other American Water operating companies' storerooms. The receiving company sends an e-mail to request a transfer of inventory. The company releasing the inventory e-mails the Fixed Assets group, copying the receiving company. This e-mail contains the part number, description, quantity, from-the-storeroom number, from location (if applicable), and to-storeroom number. This e-mail represents authorization of the inventory transfer. The company receiving the inventory is to confirm receipt of the transfer with an e-mail to the Fixed Assets group. The "to" storeroom number and the "to" location (if applicable) are to be included in this correspondence. The e-mail represents authorization for the inventory receipt. The Fixed Assets group, upon receipt of notification from both parties, processes an inventory transfer. AWWSC will record the transaction only upon receiving an e-mail confirmation from both the receiving and transferring storerooms. The requesting company inspects the material upon receipt and, if material is refused, contacts the transferring company.

Chemicals are ordered as needed against a national agreement (blanket PO). Upon delivery to the appropriate facility, the chemicals receipt documentation is entered into the JDE procurement application by the responsible PAWC operations representative and is matched against the appropriate purchase order (PO). At least once a month, an inventory cycle count is performed and issues are made from inventory to record the quantity of chemicals used during the period. The monthly count and issues from inventory are prepared and approved by the local Field Operations group. A full physical inventory of chemicals is also performed on an annual basis.

Fuel is received as needed at the appropriate fuel storage and distribution facility and is placed into inventory. Once a month, a fuel-volume physical inventory is performed and the inventory is adjusted as needed. Adjustments to fuel inventory are prepared and approved by the local Field Operations group. The approved adjustment is recorded into the JDE application locally and is then posted by the AWWSC Fixed Assets group.

All inventory movements are entered into the JDE application by a designated Field Operations group administrative personnel member. Only the designated administrative personnel have the ability to enter inventory movements in the JDE application. Access to the JDE application is requested and approved by the individual's supervisor by completing a User Access Request (UAR) form. The completed UAR form is submitted to the system administrator in the PAWC Information Technology Services department.



Major Systems

PAWC is currently using the JDE Enterprise Resource Planning (ERP) procurement application, but PAWC is not using the Distribution Requirements Planning (DRP) inventory module that is offered as part of the application. The JDE system produces four monthly inventory-related raw data reports from the World Writer system:

1. Assets (on-hand balances of parts)
2. Monthly transactions of parts taken out of inventory
3. Cost per item in inventory (average cost of the item times the number of parts in inventory) for each item in each storeroom
4. Monthly transactions of parts received into inventory (both item quantities and dollars)

An Inventory Scorecard Report and a Summary Report, which are based on the above raw data that is extracted from the JDE system, are produced by the SC Procurement group. The data in the raw-data reports is not easily available online, and therefore one would have to contact the Fixed Assets group to get current version of this information. The Fixed Assets group also has inventory-related functions in relation to the ownership and maintenance of the parts-number listing and inventory-level data.

The AWWSC SC group maintains two Access databases that are inventory related and are populated with the raw data that is extracted from the JDE system. One contains information on the various storeroom facilities. The other contains item-related data, such as part numbers, part descriptions, min/max information, ABCD analysis, and part classifications.

These Access databases and the JDE raw data are then pulled into an Excel spreadsheet that was created about three years ago by a consultant. The spreadsheet, which is produced on a monthly basis, contains six sections, as follows:

1. An instructional page
2. A high-level overview of the inventory turns for the month by region, state, district, and storeroom – This data is not presented by item number, but rather by the following inventory categories:
 - Pipe turns
 - Non-pipe turns
 - Chemical turns
3. A graphical presentation of the inventory turns data that was presented on the second page, showing historical trends in the inventory turns for the last approximately 18 to 24 months.
4. A database page that calculates what inventory items each storeroom has that are over its designated maximum-inventory on-hand balance level – this report includes only overages, not shortages. Its data is classified according to three categories: within maximum (max), slightly over, and over by a large amount.

5. Detailed information on parts, part numbers, part classifications, minimums (mins), maximums (maxs), recommended levels (usually basically an average of min and max), on-hand balances (in quantities and dollars), identification of parts that are below their listed mins, calculation of the dollar amount in inventory for each item, etc. (Note: PAWC does not identify or track safety stock levels per se, but rather uses mins as a substitute.)
6. Inventory turns detail, including monthly demand, quantity on hand, and turns by item by storeroom.

These reports are posted on the American Water QuickPlace Intranet site, where they are accessible to designated employees.

From the above data, another set of monthly reports is created. These reports present summarized inventory-turns data on a state-by-state basis. Such reports include three numbers for each state:

- ◆ Month-end on-hand inventory in dollars.
- ◆ Demand during the month in dollars.
- ◆ Summary of total monthly inventory turns for the state.

This summary report goes to managers and the individual storekeepers. It also contains the same set of three numbers, in an historical sense, for the last twelve months. While this report can be run by request at any time, it is generally only run at year end and is very seldom requested more frequently.

An internal audit of selected aspects of the inventory function was completed in November 2005 by the American Water Internal Audit Services group. As stated in the audit report, the purpose of the audit was to review and evaluate the adequacy, effectiveness, and efficiency of internal controls and to determine compliance with corporate and regional policies relating to billing, payroll, and fleet vehicle management. The audit scope for the inventory portion of the internal audit was statewide. The final audit report included negative findings in relation to the following topics:

- ◆ "Information in the inventory database is not complete or accurate."
- ◆ "There has been no analysis of inventory quantities for excess and obsolete items and there is no written inventory management plan for reducing excess and obsolete inventory."

Findings & Conclusions

Finding IV-25 Based on the numerous inventory procedures and systems deficiencies that were identified during the course of this audit, it appears that the inventory data and calculations that are produced by PAWC are inaccurate to some extent.

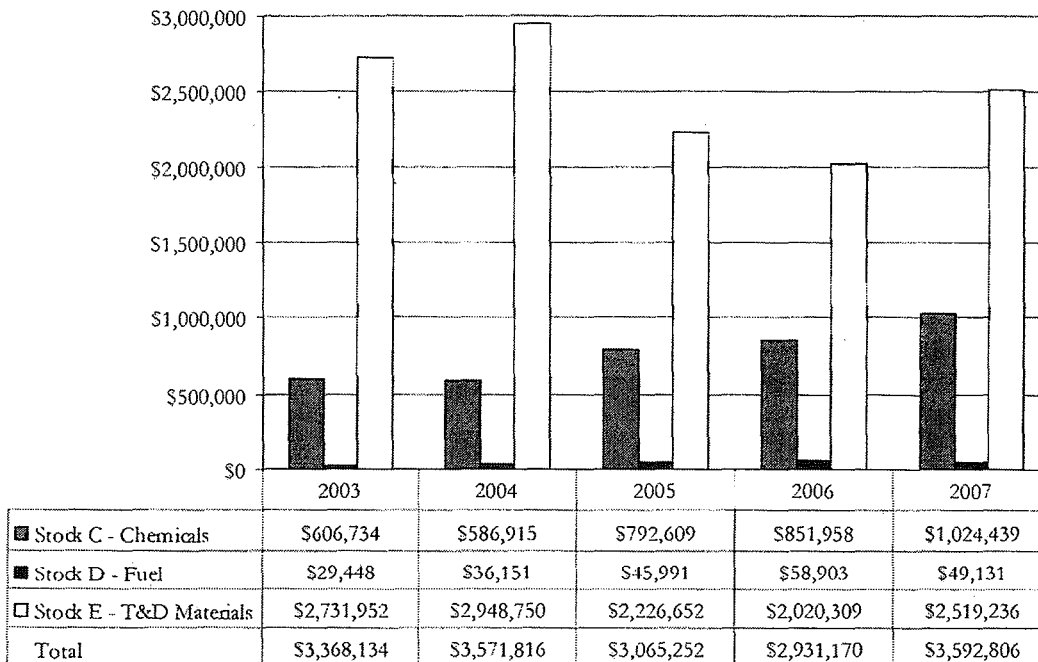
With the number of significant deficiencies that were identified in the inventory procedures and systems (such as a lack of standardized policies and procedures, deficiencies in storekeeper training, and differences among the storerooms in the physical security measures used), it would be hard to conclude



that the inventory numbers that are in use every day at PAWC are accurate. A similar conclusion was reached as a result of an internal audit that was conducted in November 2005, which stated that "Information in the inventory database is not complete or accurate." Because the inventory procedures and systems that are in place at PAWC are not significantly different from or improved upon since 2005, Schumaker & Company has found that this conclusion is still correct.

Due to a lack of overall data that is maintained and in light of the data collection techniques and systems that are used, the accuracy of the following data that was provided to Schumaker & Company, especially the data related to inventory turn rates, is highly suspect. (See *Finding IV-26*.) *Exhibit IV-33* displays PAWC's inventory values, by type, for 2003 to 2007 as provided by PAWC.

Exhibit IV-33
PAWC Inventory Levels by Stock Type
as Reported by PAWC
2003 to 2007

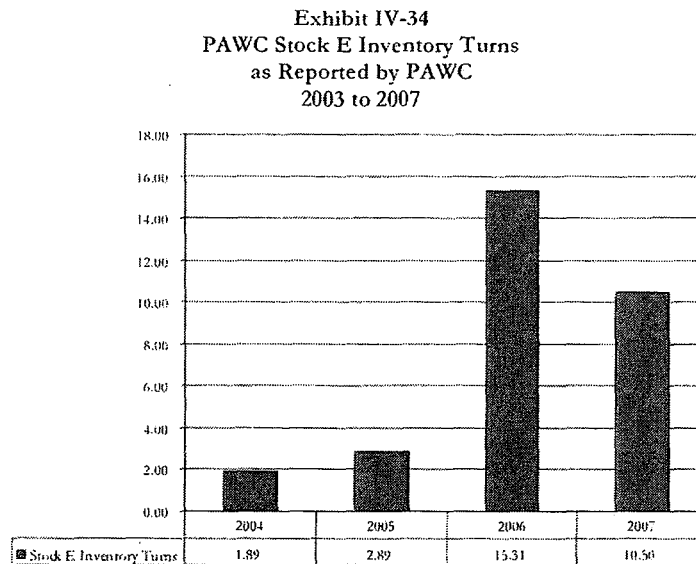


Source: Information Response 858

It should be noted that the Schumaker & Company analysis of the inventory levels identified a discrepancy between two pieces of documentation related to inventory levels that were provided by PAWC. To be exact, the inventory levels that were reported for EOY 2005 were different by \$63,000. In response to an inquiry for an explanation, PAWC management stated that it believes the discrepancy is due to closing the books for year-end early in December for the years 2003-2005. PAWC

management further stated that it was unable to reconcile the difference, but believed the reports used to provide a response to information response 321, which came from the inventory accounting system, was not run at the exact time the books were closed in 2005. Conversely, information used in PAWC's response to information response 858 came from the JDE financial software, which serves as the basis for amounts appearing on the balance sheet.

Exhibit IV-34 displays PAWC's Stock E inventory turn data for 2004 to 2007, as reported by PAWC. (The first year PAWC began tracking inventory turns was 2004; also, pipe was not included in the calculation until 2006.) No data is available for Stock C or D turns, as PAWC does not track this data. The formula that PAWC uses for calculating inventory turns is 12-month running demand divided by month-end inventory level, which is the industry standard calculation methodology. Again it must be stated that the accuracy of the following data is suspect due to inconsistency in the data collection procedures and the absence of a viable and fully functional inventory management computer system. This accuracy problem is demonstrated by the extreme increase in the inventory turns data between 2005 and 2006, although part of this increase was explained by PAWC as being due to the fact that prior to 2006, American Water Companies, including PAWC, did not include distribution piping in the inventory turns calculation. However, Schumaker & Company consultants have never before seen inventory turns that were this high at any of the many utilities that we have previously audited. This observation, combined with the operational problems presented by inadequate inventory data collection and monitoring computer systems and the overall lack of materials management procedures and oversight, leads to even more reason to question the veracity of this data.



Source: Information Responses 319, 856, and 857



Again Schumaker & Company consultants identified discrepancies in the inventory turns data between two documents that were supplied by PAWC. In response to an inquiry concerning this, PAWC replied that they believed that this was also due to timing errors related to the times that the reports were run.

Exhibit IV-35 illustrates Stock E inventory turns by warehouse for 2004 to 2007, as supplied by PAWC. Again, this data is highly suspect for the reasons that were stated above.

Exhibit IV-35
PAWC Stock E Inventory Turns by Warehouse
as Reported by PAWC
2004 to 2007

District	Dec-04	Dec-05	2005 Targets	Dec-06	2006 Targets	Dec-07	2007 Targets
PENNSYLVANIA	1.89	2.89	5.05	15.31	6.60	10.50	14.08
PA- ABINGTON	6.65	11.07	10.89	23.62	22.50	14.49	23.25
PA- BANGOR	1.18	4.82	3.89	15.01	6.46	26.32	11.50
PA- BERWICK	0.92	0.58	6.98	6.62	1.98	5.87	3.25
PA- BROWNSVILLE	1.06	6.92	2.75	63.14	10.47	23.03	21.25
PA- BUTLER	2.62	3.96	9.96	16.62	6.97	3.82	12.00
PA- CLARION	-0.12	7.02	3.47	17.53	12.11	2.44	13.20
PA- COATESVILLE	1.32	1.33	8.14	4.59	3.48	5.10	4.01
PA- FRACKVILLE	1.80	1.15	3.35	5.43	3.70	2.94	4.50
PA- HERSHEY	3.30	2.48	7.95	14.67	6.89	10.16	9.50
PA- INDIANA	1.18	3.32	7.98	21.75	6.73	8.29	7.80
PA- KANE	2.10	3.93	2.40	27.24	2.00	11.37	10.00
PA- LEHMAN PIKE	2.09	4.60	2.52	62.09	2.50	18.28	22.00
PA- MCMURRAY	1.53	2.57	4.43	28.80	7.70	17.00	16.90
PA- MECHANICBURG	2.80	3.23	9.06	16.52	11.57	13.30	12.25
PA- MILTON	1.53	5.24	4.44	11.41	8.40	7.80	12.00
PA- MON VALLEY	3.29	3.22	5.77	19.63	6.16	26.67	13.50
PA- NAZARETH	1.94	12.34	1.15	40.19	16.91	25.00	28.00
PA- NEW CASTLE/ ELLWOOD	2.42	4.01	5.36	27.67	14.42	18.35	16.00
PA- NORRISTOWN	3.81	4.05	5.65	30.87	9.45	23.57	10.40
PA- PHILIPSBURG	2.04	7.47	9.79	16.14	14.54	18.74	15.50
PA- PITTSBURGH	1.69	1.93	4.14	8.68	4.98	7.70	6.45
PA- POCONO	1.48	18.16	7.17	68.30	19.51	19.37	38.00
PA- ROYERSFORD	4.17	7.27	6.15	17.65	6.24	34.74	11.80
PA- SUSQUEHANNA	2.61	4.05	7.13	24.88	6.46	6.00	16.20
PA- UNIONTOWN/ CONNELLSVILLE	1.56	6.24	6.32	61.98	7.59	24.94	31.00
PA- WARREN	2.32	1.11	7.76	7.59	4.23	1.70	8.25
PA- WILKES BARRE/ SCRANTON	2.06	2.80	4.08	11.70	4.82	7.99	7.75
PA- WYOMISSING	0.29	6.22	9.55	12.01	14.82	15.05	16.00
PA- YARDLEY	0.96	1.59	4.65	9.92	4.89	5.81	6.10
PA- GLENN ALSACE	N/A	N/A	N/A	N/A	N/A	29.78	N/A
PA- POCONO SEWER	N/A	N/A	N/A	N/A	N/A	21.83	N/A
PA- PUNXSUTAWNEY	N/A	N/A	N/A	N/A	N/A	2.76	N/A

Source: Information Responses 319 and 856

Many factors can influence the turn rate from one warehouse to the next. According to PAWC management, an explanation of variances would require significant inventory analysis; therefore, it was

not provided. PAWC management did provide some general statements that were made to support the fact that differences occurred. Specifically, PAWC management stated the following:

- ◆ The turn rate is much higher in areas with low maintenance requirements and high project requirements, which would cause the stocking locations to keep a relatively small amount of normal O&M inventory on hand, but still have a large demand for materials to be used on projects.
- ◆ Pipe sizes located within the territory served by each warehouse are different, thereby a territory system that has a large range of pipe sizes is required to keep a larger amount of inventory on hand. Having this larger amount of materials in inventory increases the dollar value of the inventory at such a location and therefore decreases the turn rate.

An inquiry was made to PAWC concerning an explanation of the reason that most of the warehouses experienced higher turn rates in 2006, then these turn rates dropped again in 2007. PAWC responded that early in PAWC's 2005-06 inventory reduction initiative, individuals responsible for inventory levels at the local warehouses reduced levels to achieve higher targeted turn rates. Experience demonstrated that the levels were too low. Also, during this time, delivery lead times for certain stock items increased significantly. Consequently, adjustments were made to balance operational requirements and fiscal responsibility and, as a result, Stock E balances increased and inventory turns decreased.

Incorrect operational data makes running a viable and efficient materials management operation all the more difficult. When actions and conclusions are made based on inaccurate data, in many cases, the resulting actions also tend to be incorrect. Data accuracy in the inventory function is an essential requirement of being able to run an effective inventory system, be it in a utility, a manufacturing firm, or any other business operation. Commonly-accepted materials-management best practices place great emphasis on the accuracy and integrity of the data that is used to manage an inventory function.

Finding IV-26 The inventory management computer systems that are currently in use are very out of date and the data that is collected is by no means sufficient to maintain proper control of inventory.

PAWC does not use a company-wide, integrated inventory-management computer application. As of the end of 2007, PAWC was using a 12-year-old version of the JDE procurement application as its materials management system. While such a module does have some inventory-monitoring capabilities, they are very limited at best. What's more, they require numerous workarounds and additional computer programs to be able to function as even a very minimal materials management system. This limitation results in a lack of both accurate data and detail on the inventory as well as a severe lack of the operational features and functionality that would be included in a contemporary ERP materials management module. This deficiency is critical in nature and has a significant deleterious impact on the ability of the PAWC materials management function to properly support the operations of the Field Operations groups.



Because PAWC does not use a company-wide, integrated inventory-management computer application, it is difficult to tell at this time what its inventory levels should be. Using the levels shown in *Exhibit IV-33*, Schumaker & Company believes that PAWC should at least be able to reduce its Stock E – T&D Materials inventory levels to \$2,100,000, approximately what it experienced in average between 2005 and 2006, as a result of improved and timelier information on inventory levels at each location. The use of an integrated inventory management system (which we have been told American Water has, but PAWC does not use) would likely allow PAWC to reduce its inventory levels from those recorded for 2007. Based on achieving a \$2,100,000 Stock E inventory level, PAWC would be able to reduce its Stock E inventory valuation by approximately \$400,000 (difference between 2007 level and \$2,100,000), a one-time savings. Assuming 25% inventory carrying charges (which is the general industry standard), PAWC would also be able to reduce its annual costs by approximately \$100,000 (25% x \$400,000). While PAWC has stated that in 2005 and 2006 it experienced operational problems when running at these inventory levels, the implementation of an integrated inventory-management system should allow PAWC to achieve these levels and operate with few problems due to the significantly improved availability of accurate and timely inventory information.

Finding IV-27 There is no centralization or leadership in the materials management function at American Water operating companies, including PAWC.

There are no clearly defined levels of authority or designated responsibility for the management of inventory at PAWC. As a result of the Supply Chain group having no responsibility for inventory management and control, there is no central point of inventory management and focus within AWWSC. Rather, this function is left to the responsibility of the individual state-operating companies, with essentially no guidance. This is also true at PAWC with the exception that one of the Network Operations supervisors has taken it upon himself to oversee some of the activities of the various storerooms. However he has no designated authority to force that correction to procedures and processes to be made at the individual storerooms outside of the Pittsburgh district. (He has been given this authority in that district, but it is still on a part-time basis due to his having other assigned responsibilities.)

In the past, this Network Operations supervisor performed more inventory-related functions such as producing a listing of surplus or obsolete inventory based on data that was sent to him by the individual storerooms. However, because of his time constraints, he has had to curtail these activities. As such, there is now no listing produced of these obsolete items within PAWC.

The lack of designated management of the materials management function at both AWWSC and PAWC has resulted in each storeroom performing its assigned functions in the manner it best sees fit. Inspection of several storerooms performed by Schumaker & Company consultants found a wide range of daily operating procedures, housekeeping, and physical security measures for the inventory as employed by the individual storerooms.

Finding IV-28 **No standardized, comprehensive inventory-management policies and procedures exist for either American Water in general or for PAWC.**

In response to the Schumaker & Company request for copies of the "materials management, inventory and warehouse/stores procedures manuals," two documents were provided, those being:

- ♦ A copy of the "2006 Sarbanes-Oxley 404 Program Process Narrative," which was last revised in March 2007 – At just six pages in length, this document provides only an overview of portions of the inventory process that was developed to satisfy the requirements of the Sarbanes-Oxley Act. It does not contain nearly the amount of detail that would be found in a good set of materials management procedures. For a company the size of PAWC, it would be expected that a comprehensive materials-management procedures manual would be quite voluminous. Only a reference document of such mass would allow for the presentation of a sufficient level of detail as required to perform the materials management function in a standardized and comprehensive manner. Also, because it is not in the format of a procedure, referencing and looking-up procedures requires a manual scan of the document for the topic of interest. Moreover, revision control can be applied only to the document as a whole.
- ♦ A copy of an American Water PowerPoint presentation on the topic of "Inventory Cycle Count Training" – Unfortunately, the presentation is completely based on how to conduct cycle counts using the JDE Distribution Requirements Planning module that PAWC does not own. Therefore, it is of no use to PAWC. Additionally, because it is presented in the format of a presentation rather than a structured procedure, it is essentially useless for reference and lookup purposes. And because it is not in the form of a procedure, revision control and recording would be impossible.

Finding IV-29 **Insufficient inventory-skills training is provided to storeroom personnel.**

The PAWC employee who is responsible for the operation of the storerooms is generally a supervisor in the Network Operations group who handles the function on a part-time basis. Upon being given these responsibilities, no formalized training program, either internally or externally, was provided to instruct these former field operations personnel in the proper procedures to be followed in maintaining and tracking the inventory. Rather, training is done on an informal basis by someone who has some "limited" knowledge of the function.

Finding IV-30 **There is currently no standardization of part numbers across the PAWC storerooms or American Water operating companies in general, although this situation is being reviewed at the current time.**

An AWWSC Part Number Standardization Committee was established in 2006 and has been working on the development of a standardized part-numbering scheme that is to be used across all American Water operating companies. As of December 2007, this effort was still in progress. When this effort is completed, PAWC should be an early adopter of this part-numbering format. In that way, it would



eliminate many of the problems and much of the administrative work that results from having a non-standardized part-numbering system. This adoption will facilitate the ordering of items, improve communication between stockrooms, and is essential if an ERP materials management application is to be implemented.

Finding IV-31 There are no inventory grid systems in the PAWC storerooms, making the location of parts difficult and time consuming for those who are not familiar with the inventory layout at that particular storeroom.

An inventory grid system (row, rack, and bin) is critical to the efficient functioning of a storeroom. While the primary storekeeper may know the locations of items, others who need to find parts would have a hard time locating them without a grid locator system and clear labeling of the physical rows, racks, and bins. Additionally, the lack of an inventory grid system presents the opportunity for "losing" parts that are put in a different location than normal or parts that are not used on a regular basis. The current software system that is used for materials management will not support the identification of item locations as it does not have that functionality. However, a contemporary ERP materials management module would certainly have this capability.

Finding IV-32 There is no standardized, formal cycle-counting program in place.

Each storeroom is left to decide whether and how to do cycle counting. There should be a standardized procedure and frequency for this process that is to be followed by all of the storerooms. Because the current materials management application does not support cycle counting, a temporary workaround would have to be developed for this process until a new ERP materials management module was implemented.

Finding IV-33 PAWC does not have a mechanism to identify and report on material that is obsolete or held in excessive quantities.

The identification of obsolete and excess material is at best difficult. Because such an obsolete/excess analysis has not been performed since at least 2006, when the AWWSC Inventory Management group was eliminated, it is fair to assume that there are significant quantities of obsolete/excess material in some, if not all, of the storerooms. This obsolete/excess material is truly a waste of money in that it has to be maintained and counted with no resulting benefit. It also takes up valuable inventory storage space in the storerooms. Without a computerized analysis and report of inventory movement, this identification process would be manual and difficult to undertake. Additionally, there should be a standardized inventory-management plan that addresses how to deal with this topic. Unfortunately, no such plan exists, and without the data, it would be almost impossible to perform anyway.

It should be noted that the internal audit of the inventory function that was conducted in 2005 that identified the existence of this problem.

Finding IV-34 Maintenance items are not inventoried and therefore can only be reordered based on visual inspections.

The current materials management application is not being used for those items that are labeled maintenance items, despite the fact that such items were relatively numerous in the storerooms that Schumaker & Company consultants visited. Therefore, the on-hand balances of maintenance items must be determined through visual inspection. Such visual inventory monitoring is fraught with the potential for errors and this practice could result in stockout situations.

Finding IV-35 The strategic parts inventory could be reduced for PAWC by consolidating them into a few strategic inventory locations.

Strategic parts are those that are used on an infrequent basis, but are necessary for emergency repair situations. However, this necessity does not mean that all of the parts have to be stored in all of the storerooms. Rather, a few storerooms that are geographically diverse could be designated as the repositories for these parts. Then, all of the strategic parts could be centralized in these locations, which should present an opportunity for reducing the numbers that are kept in inventory. When a need for these parts arises, the required parts would be shipped, by whatever means necessary, to the location needing the parts. Based on the geographical diversity of the centralized strategic parts storerooms, this storage strategy should result in a delay of only, at most, a few hours. Because the requirement for these parts is very infrequent, this minor delay is a worthwhile tradeoff for being able to reduce an expensive portion of the PAWC inventory. Furthermore, most delays in part arrivals would occur concurrently with preparatory work at the work sites.

Finding IV-36 Inventory maintenance and control is inconsistent across the PAWC storerooms and the control of inventory was observed to cover the range from inadequate to sufficient.

Proper inventory maintenance and control is the result of several factors, among them:

- ◆ Ability to track the inventory levels and movements in an automated fashion.
- ◆ Proper physical security in the storeroom to guard against items being taken from inventory without the proper paperwork/data entry and shrinkage.
- ◆ Consistent adherence to proper inventory-control procedures including item receipts, item transfers, item issuing, and cycle counting.

Observation at several storerooms by Schumaker & Company consultants found that adherence to the above tenets was very inconsistent. While some of the storerooms appeared to have a reasonable level of inventory control, others were seriously lacking in this regard. Much of this problem is the result of a lack of proper, standardized inventory-control procedures, deficiencies in the training of the storekeepers, and a seriously deficient materials management computer system.



Finding IV-37 The vast majority of the storerooms that were visited by Schumaker & Company consultants did not have a computer terminal in the storeroom area; rather, data entry and lookup were the responsibility of an administrative person in each of the service center front offices.

Contemporary materials management best-operating practices call for computer terminals to be located in the storeroom area. They also mandate that data entry be done by the person who is responsible for control of the inventory. This storeroom location provides several advantages, including:

- ◆ Significant reduction in the number of inventory transactions that are not entered (or entered improperly) into the system – It has been found that if the computer is right there at the point of transactions, there is a much better chance of the data being entered in a timely and accurate manner.
- ◆ More incentive for the consistent use of the computer terminal by the storekeeper and a greater requirement that he/she learn how to use the system properly.
- ◆ Elimination of transcription or interpretation errors due to having an employee who is not part of the materials management operation performing the data-entry function based on hand-written detail of the transactions.

Each of the above items would serve to render the materials management operation more consistent and accurate. With the advent of a new materials management application, these local computer terminals will be an absolute requirement.

Finding IV-38 Under the current procedures, rolling stock (that being the inventory that is carried on the field operations trucks) is tracked as part of the on-hand balance of parts.

The on-hand balance that is shown on the existing computer system is composed of the items that are stored in the materials management bins and the items that are carried in trucks. Inventory items issues are not recorded at the time the material is taken out of the storeroom. Rather, the on-hand balance inventory is decremented with the completion and closeout of a work order (which contains a parts list). In the numerous materials management reviews that Schumaker & Company consultants have performed, we have never seen this type of operational procedure before. Standard operating practice is to decrement the item on-hand balances at the time material is issued from the storeroom. The current PAWC procedure presents many problems, among those:

- ◆ The amount of material that is on the storeroom shelves is not reflected accurately in the current materials management application. That is because the on-hand balance numbers include the rolling stock and rolling stock is not easily located when needed. This inaccuracy leads to a requirement for reordering to be done on the basis of visual inspections rather than computer-generated data. The visual-inspection method of inventory control presents significant problem in terms of the possibility for stockout situations to occur and is very

manual in nature.

- ◆ In order to do a physical inventory (which is done on an annual basis), all of the rolling stock must be counted. This task requires that the inventories be done at night while the trucks are in the garage. Having to inventory stock in multiple trucks increases the possibility for errors in counting. It also makes the physical inventory process much more complicated and time consuming. Furthermore, it makes cycle counting essentially impossible.
- ◆ If a work-order materials list contains inaccurate information as to the material that is required, inaccuracies in the computer system's on-hand balance numbers will result from improper decrementing of inventory.

This method of tracking inventory is fraught with problems and should be modified to a more standard method of operation.

Recommendations

Recommendation IV-24 **Perform an internal audit of the inventory data that is produced and used by PAWC to determine the accuracy thereof. (Refer to Finding IV-25.)**

Performance of an internal audit is the best means to determine if a problem exists with the inventory data that is produced and used by the various PAWC storerooms. Such an audit would also gauge the severity of such data inaccuracies if they are, in fact, identified. It is the recommendation of Schumaker & Company that such an audit focus on a wide range of the PAWC storerooms due to the inconsistencies in operations that were identified. It is our belief that the data at some of the larger storerooms, such as the Bethel facility in the Pittsburgh District, will be reasonably accurate thanks to the attention to procedures and details that was observed at that facility. However, the smaller storerooms that are often run by employees who do not have significant experience with or training in materials management would be more likely to have data compromises and accuracy problems. Schumaker & Company consultants observed more inconsistencies at the small PAWC storerooms than at larger facilities.

Recommendation IV-25 **Initiate an ERP materials management module evaluation and selection process with the intention of identifying a fully integrated ERP application that would serve the needs of the PAWC materials management function. (Refer to Finding IV-26.)**

This materials management application evaluation and selection process should be performed as a part of an American Water-wide initiative to identify, evaluate, and select an ERP software package that would satisfy the needs of all its operating companies. While PAWC could, theoretically, purchase a standalone, off-the-shelf materials management package, such a package would not serve the requirement of having integration between the procurement module and the materials management



module. This programmatic link and the ability of each program to provide data to the other are critical to the efficient and effective operations of the materials management function. While an integrated procurement and materials management module could be purchased and implemented, it would certainly be more beneficial if it were part of a full ERP package. That benefit, again, is derived from the integration among all of the modules, particularly with the financial and workforce management and planning modules.

Recommendation IV-26 Establish a central point of management and responsibility for the materials management function at both AWWSC and PAWC.
(Refer to Finding 0-6.)

Schumaker & Company consultants have never previously reviewed a utility organization that did not have centralized management and control of the materials management function. As a matter of fact, this centralization is normally a major point of focus for most utilities. Without standardization and discipline of the materials management function, the operation of the company can be expected to suffer from both an operational and a financial perspective.

Therefore, it is very important that PAWC and AWWSC establish this formal, centralized materials management structure on a priority basis. Not doing so presents a major risk factor in their operations. The primary focus of this Materials Management group would be to develop and enforce a standard set of procedures that would be used to guide and control the operation of the various storerooms across all of the American Water operating companies. Additionally, a materials manager should be named or brought onto staff at PAWC. It would be the primary function of this employee to ensure standardization of the storeroom operations within PAWC. For a company as geographically diverse as PAWC is, this standardization on the proper way to handle the materials management function is even more critical. Additionally, this materials manager would be responsible for monitoring the results achieved by each of the storerooms and for addressing any performance issues that were identified.

Recommendation IV-27 Develop a comprehensive and detailed materials management procedures manual that is specific to PAWC. (Refer to Finding IV-14.)

Such a comprehensive and detailed materials management manual would serve numerous purposes, including the following:

- ◆ It ensures the standardization of processes across PAWC.
- ◆ It would be very detailed and written in cookbook fashion to allow it to be used as a step-by-step guide to performing various material management procedures in the proper manner.
- ◆ It can be used as a reference guide for existing employees who are unsure of the proper method of performing a task.
- ◆ It would provide lookup and indexing capability, thereby making it a quick and easy reference

tool.

- ♦ It would be written in a manner that was specific to the unique situation and operating environment of PAWC, thereby ensuring applicability in all situations.
- ♦ It would provide the capability to revise and track revisions to the procedures in the future.
- ♦ It can be used for the training of new employees.

Developing such a manual is a very significant undertaking, but the benefits to be derived from its use are also significant. This significance especially holds true in a situation like that of PAWC, where a major emphasis is standardizing procedures across the diverse geography of the company in Pennsylvania. It is important that it be written in standard procedural format to allow for a step-by-step description of the included procedures and for proper revision control to be implemented.

Recommendation IV-28 Establish a formalized training program at PAWC for the personnel who have been designated as being responsible for the materials management function at the various storerooms. (Refer to Finding IV-29.)

Such training could be done on either an internal or external basis. The important consideration is that it be done in conjunction with a set of standardized procedures that are specific to PAWC. This effort should serve to ensure that standardization of materials management procedures is achieved at all PAWC storerooms. A series of refresher courses should also be established that would be held on a regular basis for existing storekeepers to reinforce their knowledge of proper operating procedures and to educate them as to new procedures and/or systems that had been put into place.

Recommendation IV-29 Adopt and expeditiously implement at PAWC the standardized part-number format that is being developed by the Part Number Standardization Committee. (Refer to Finding IV-30.)

As stated previously, implementation and use of a standardized part-numbering system will facilitate the materials management function at PAWC by facilitating the ordering of stock items and by improving the ability of stockrooms to communicate with each other. Additionally, such a standardized numbering system is required to perform a full ERP materials management application implementation and will permit the software to be used to its greatest advantage. PAWC should expedite the adoption and implementation of this part-numbering scheme to the greatest extent possible as it will render immediate benefits to the operation.



Recommendation IV-30 Design and implement a standardized inventory-grid location system at all PAWC storerooms. (Refer to Finding IV-31.)

An effective inventory-grid location system is not difficult to design or implement in smaller storerooms such as those that are used by PAWC. A logical layout of the numbering system and clear marking of the physical bins are keys to making the system work effectively. A master design should be developed concerning location-identification nomenclature that would be used by all of the storerooms. The individual storerooms would then decide how to apply this system to their particular storeroom, because all of the PAWC storerooms have different physical layouts. Also, a standard-location labeling practice should be developed and implemented to ensure that the labeling at all storerooms is as legible as possible. These location and labeling protocols will have to be implemented and used before an ERP materials management module is put into place. Because the current PAWC materials management software does not have the capability to handle this information, a relatively simple spreadsheet could be developed that would contain this information for each storeroom. Having this data already developed and available would certainly facilitate the implementation of an ERP materials management module.

Recommendation IV-31 Develop and implement a standardized procedure for performing cycle counting that is to be used at all storerooms. (Refer to Finding IV-32.)

A standardized procedure will be a requirement at the time of the implementation of a contemporary ERP module. While the process would have to be temporarily manually driven, it still could be standardized to some extent in determining what and how many items should be counted and how frequently they should be counted.

Recommendation IV-32 Develop an inventory management plan that addresses how to identify and handle obsolete and excess material. (Refer to Finding IV-33.)

It would be beneficial for PAWC to develop an inventory management plan to address the subject of obsolete and excess material. Despite not currently having an automated program that identifies this material, it would be good to have this plan in place for the time when a contemporary materials management application is implemented. That way, it could easily be put to use at that time.

In the interim, it may be possible in some cases to use the "dust test" to identify very slow-moving material. This test involves nothing more than identifying items that have accumulated significant quantities of dust. These items could then be checked through the Supply Chain group to determine whether they are still active and being purchased. While this procedure is, at best, a stopgap measure, it would still be better than no program at all.

Recommendation IV-33 **Incorporate maintenance items into the current materials management application to gain better inventory control over these items. (Refer to Finding IV-34.)**

While maintenance items are not as critical to the operation as stocked parts, they still can create operational problems if a stockout situation occurs. Including them into the materials management application will also avoid having to perform constant visual inspections to determine whether a reorder is required. Again, with a contemporary ERP materials management module, these items would be included in the inventory. As such, it is better to add them to the system in advance to facilitate later implementation into a state-of-the-art materials management system. While it is likely that implementation of this recommendation may require some additional resources, it can be expected that the economic benefits that would be achieved, in terms of improved inventory control and operational performance, would outweigh the additional costs.

Recommendation IV-34 **Establish a system of a few centralized storerooms that are to be used for strategic parts storage. (Refer to Finding IV-35.)**

A few (two or three) storeroom locations across the PAWC serviced territory should be selected based on their centralized geographic location in relation to other districts in their part of the state. These locations would be designated as storage locations for strategic parts and all of the strategic parts inventory would be transferred to them. After the parts have been aggregated, decisions can be made, based on historical usage (if this data is available) or accumulated knowledge of the operations groups, as to how many of the parts should be kept on hand to properly service that portion of the state. The excess parts should be disposed of in whatever is the most financially beneficial manner. In the future, when a need for any of these strategic parts arises, which is infrequent, they can be shipped or transported on PAWC vehicles to the requesting location.

Recommendation IV-35 **Implement a program at PAWC to standardize the inventory maintenance and control procedures across the PAWC storerooms. (Refer to Finding 0-15.)**

While some of this standardization will result from the implementation of a new materials management application, other items (such as physical security in the storerooms and knowledge of proper procedures by the storekeepers) will need to be reviewed and addressed separately. This review and the resulting procedural changes should be applied in a consistent manner across all of the PAWC storerooms to ensure standardization.



Recommendation IV-36 **Install computer terminals in secure locations at all of the PAWC storerooms. (Refer to Finding IV-37.)**

The standard practice in contemporary materials management is to have the warehouse/storeroom personnel be responsible for the entry of data in relation to inventory transactions. This centralization of responsibility empowers the warehouse/storeroom personnel with complete control over the integrity of the inventory for which they are responsible. It also makes it necessary that they learn to use the inventory management software and become knowledgeable of its functionality. At the same time, it serves to eliminate the errors that tend to occur with the handwritten recording of transactions and the input of this information by an administrative person with no direct connection to the inventory transactions. Such proximity of computer terminals and their use by the storeroom personnel will be a requirement in the implementation of a new materials management software package.

Recommendation IV-37 **Develop and implement a procedural modification that stipulates that material is decremented from the inventory at the time of issue from the storeroom, not at the time that it is used in the field. (Refer to Finding IV-38.)**

This new procedure is a necessity if proper control of inventory and inventory accuracy are to be maintained. Decrementing the storeroom on-hand inventory at the time of issue is a standard procedure in materials management. That is because it is the only way to maintain proper and accurate control of the on-hand balances in the storeroom. It puts the responsibility for proper control on inventory accuracy right where it should be—with the storekeeper. Again, such an industry standard procedure will be a requirement if a new materials management application is to be implemented.

E. Risk Management

This section provides a discussion of risk management services provided by American Water Works Service Company (AWWSC) on behalf of Pennsylvania-American Water Company (PAWC).

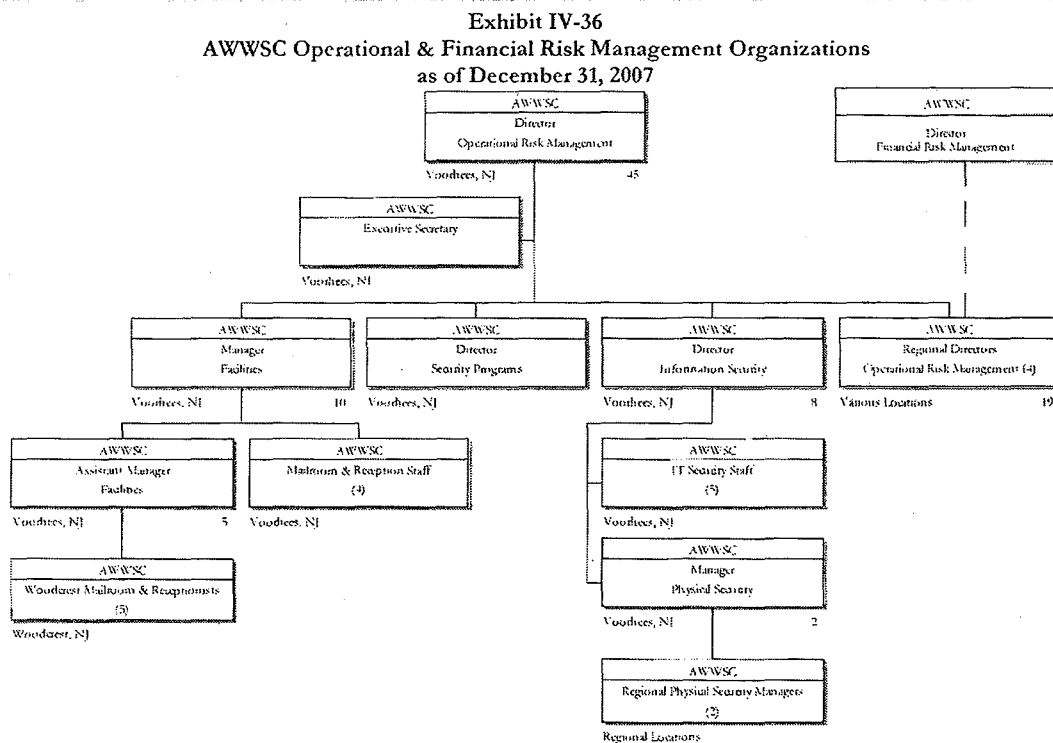
Background & Perspective

Organization & Staffing

Risk management services are provided to PAWC through AWWSC's Operational Risk Management and Financial Risk Management organizations.

Operational Risk Management

Exhibit IV-36 illustrates the various risk management organizations, which are located in Voorhees (NJ) and at various regional offices.



Source: Information Response 257 and Interviews 42 and 161



This organization's major areas of responsibility at the corporate organization in Voorhees include strategy, governance, functional coordination, and support resources in the areas of:

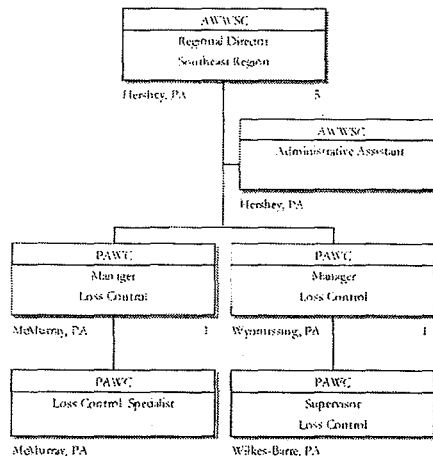
- ♦ Insurance services – bonding, certification of insurance, buildings risk, etc.
- ♦ Workplace safety
- ♦ Physical, operational, and information-systems security*
- ♦ Business-continuity management*
- ♦ Workers' compensation and liability claims management
- ♦ Event management

* Refer to *Chapter III – Support Services* (Information Technology and *Chapter V – Water Operations* for further discussion regarding Chapter 101 compliance about information-systems security and physical operational security and business-continuity management, respectively, impacting PAWC operations.

Previously, physical security was the responsibility of each region; however, in late 2007, this function was centralized at the corporate organization as a means of enhancing standardization across the American Water organization.

One of the four Regional Directors of Operational Risk Management, as shown in *Exhibit IV-36*, heads the Southeast Region Operational Risk Management organization, which is headquartered in Hershey (PA). Reporting to this director are employees located in various Southeast Region states, including Pennsylvania. The Southeast Regional Director and those employees in McMurray, Wyomissing, and Wilkes-Barre (PA) who are dedicated to PAWC operations are shown in *Exhibit IV-37*.

Exhibit IV-37
AWWSC Operational Risk Management Organizations
Southeast Region – Pennsylvania Only
as of December 31, 2007



Source: Information Response 1 and Interviews 42 and 161

The primary functions provided by this organization include:

- ◆ Employee safety and health, including Occupational Safety & Health Administration (OSHA) compliance
- ◆ Insurance services
 - Bonding
 - Builder's risk
 - Certificates of insurance
- ◆ Claims/litigation management and administration for all types of insurance coverage, especially workers' compensation, general liability, and automobile liability and event management
- ◆ Event and emergency management administration

Operational Risk Management employees serving Pennsylvania include two Loss Control Managers (LCMs), who report directly to the Southeast Regional Director, and their direct reports. The LCM in McMurray handles western Pennsylvania and the LCM in Wyomissing handles eastern Pennsylvania. Major activities performed by this group include:

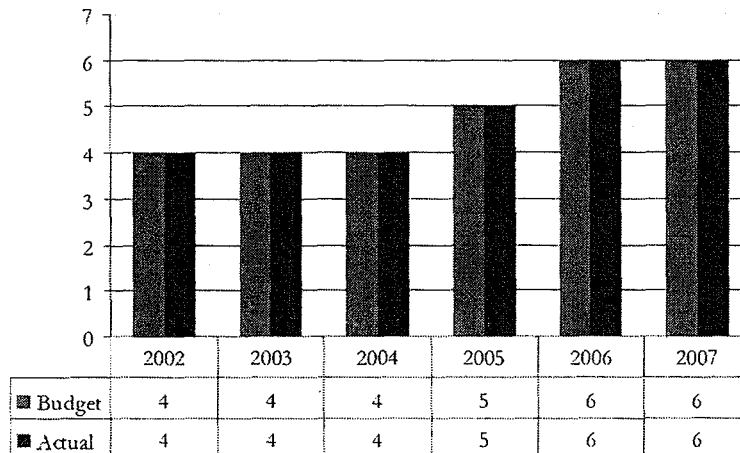
- ◆ OSHA inspections
- ◆ Initial investigation/reporting of claims (if a higher level of response is needed, then the Regional Director gets involved)
- ◆ Coordination of safety training (OSHA, defensive driving, etc.) in which the following tasks occur:
 - Annual schedule of anticipated training is made for upcoming March-February timeframe, with modifications as necessary.
 - Weekly safety-meeting topics list is sent to each Pennsylvania supervisor.
 - Training is provided either through J.J. Keller Safety & Health, weekly construction talks, contractors/vendors, the AWWSC safety library, or the Operational Risk Management group itself.
- ◆ Working together with Traveler's adjusters and attorneys (along with the Director and AWWSC attorneys, if necessary) on claims and litigation

The Director of Operational Risk Management typically meets quarterly with all four Regional Directors for a one- to two-day meeting that is supplemented by bi-weekly conference calls. The purpose of the meetings and calls is to ensure standardization and coordination in implementing the risk management policies and practices.



The number of employees handling Pennsylvania operational risk management activities from 2002 through 2007 is shown in *Exhibit IV-38*.

Exhibit IV-38
Operational Risk Management Staffing Levels for PAWC Activities
2002 to 2007



Source: Information Response 114

Actual and budget levels for 2005 include one AWWSC employee.

Actual and budget levels for 2006 and 2007 include two AWWSC employees.

Other employees reporting to the Southeast Regional Director (not shown in *Exhibit IV-37*) serve other Southeast Region states.

One of the key operational risk management targets at PAWC has been lost work days. American Water management believes that through management commitment, training, coordinated efforts with its labor unions, and other pro-active actions, PAWC has reduced the frequency of lost work-day cases by 75% since 2004 (to 2007), or approximately 25% per year. Also, in 2007, the lost work-day case rate (LWDC) for PAWC was approximately 71% below the Bureau of Labor Statistics' (BLS) published 2005 rate (latest available) for the water and wastewater industry (0.67 PAWC versus 2.30 industry). American Water management indicates that it will be revising its targets to focus on a reduction of overall injuries (not just lost work days). It will strive for this aim by incorporating OSHA reportable cases.

Financial Risk Management

The Financial Risk Management organization is a one-person "group" consisting of the Director of Financial Risk Management in Voorhees (NJ). This organization is responsible for financial/insurance risk management activities. Previously, this position held responsibility for loss control, underwriting,

and claims; however, loss control (health and safety) is now handled by the Operations Risk Management organizations.

The Director of Financial Risk Management position is responsible for managing all types of insurance coverage, except health, life, and disability, which are handled by the Human Resources organization. Types of American Water insurance coverage include:

- ◆ Automobile liability (AL)
- ◆ Comprehensive crime (employee dishonesty)
- ◆ Directors and officers (D&O) liability and excess D&O liability
- ◆ Employment practices liability
- ◆ Environmental impairment liability
- ◆ Fiduciary liability and excess fiduciary liability
- ◆ General liability (GL) and umbrella/excess liability
- ◆ Group travel accident
- ◆ Special kidnap and ransom
- ◆ Property (PR)
- ◆ Workers' compensation (WC)

On January 10, 2003, the RWE acquisition of American Water became effective. At that time, Traveler's Insurance provided GL, AL, WC, and PR coverage to American Water. Starting on October 1, 2003, American Water's coverage periods were extended to January 1, 2004 to match RWE's coverage periods. This extension put American Water on a calendar-year basis. At the same time, most American Water types of insurance coverage were subsumed under RWE's global insurance, except those that needed to remain domestic-based (32 states and Canada), such as GL, AL, WC, and fiduciary liability types. In November 2005, when RWE announced its divestiture of American Water, American Water management began preparations to become a stand-alone company. By January 1, 2007, all types of insurance coverage involving the American Water organization, except directors and officers (D&O) coverage, had been removed from RWE global insurance coverage. D&O will be removed once the RWE divestiture of American Water has been completed. American Water uses Traveler's Insurance for claims, which it has used for most years since the early 1960s. Regarding these claims, individuals at the regional organizations assist the Director of Operational Risk Management by performing the initial field investigations for claims in their geographic area. Resolution of claims requires review and approval as shown in *Exhibit IV-39*.



Exhibit IV-39
Resolution of Claims Review and Approval Limits
as of December 31, 2007

	Resolution Amount Lower Limit	Resolution Amount Higher Limit
AWWSC Regional Operations Risk Management Director		≤ \$25,000
AWWSC Regional Finance Director	> \$25,001	≤ \$100,000
AWWSC Financial Risk Management Director	> \$100,000	≤ \$1,000,000
AWWSC VP & Treasurer	> \$1,000,000	≤ \$2,000,000
AWWSC Chief Financial Officer	> \$2,000,000	

Source: Interview 41

Over the years, American Water has had a number of insurance brokers to help it in obtaining insurance coverage. Initially, the broker was locally based, and then in 1999, these activities were moved to Frenkel & Co, Inc. In 2004, after RWE took over, American Water used Willis Group Holdings (Willis) as its insurance broker for a brief period of time. In 2005, it moved to Marsh, Inc. (Marsh), and then recently it kept Marsh as its broker for property and casualty products (the bulk of its coverage) but went back to Willis for its financial products. Its choice of broker has historically been based on factors such as service, knowledge, and experience of the staff providing services.

The broker and insurance companies regularly provide American Water with insurance market information, including industry trends, losses, and underwriting results, that impacts pricing and coverage terms and conditions available for its lines of insurance. American Water management believes that 2002 was particularly challenging as the events of September 11, 2001, the collapse of Enron, Worldcom, and Arthur Andersen, and other influences adversely impacted the global insurance market. Coincidentally, RWE announced its intention to acquire American Water in September 2001, which, subject to regulatory approval in several states, was completed on January 10, 2003. In preparation for completion of the acquisition, American Water's insurance broker at the time conducted research and analyses to identify a "runoff" policy. The goal of this investigation was to protect the interest of American Water's directors and officers for six years following the completion of the acquisition (up to January 10, 2009) in the event of claims made for the period prior to January 10, 2003 (i.e., American Water is not liable for any claims made after January 10, 2009 related to the period prior to January 10, 2003).

From 2003 to 2005, RWE annually evaluated the structure of its insurance program. Insurance brokers and/or insurance companies were reviewed on the anniversary renewal of each insurance-type coverage and were replaced if service was deemed unacceptable. American Water maintained responsibility for the placement of its primary property and casualty insurance, including general liability, auto liability, and workers' compensation. During this same time period, its insurance brokers and insurance companies were also subject to anniversary review and potential change. American Water management

believes that best practices indicate going out to the market every three years and that American Water has gone out too frequently in recent years (partially due to RWE changes). Despite this history, last year American Water was oversubscribed (more demand than necessary, indicating that the issue may not be a problem). American Water was required to go out for excess liability and property again in late 2007.

Operating Expenses

Insurance Coverage Expenses

Exhibit IV-40 displays annual insurance premium expense, other than group, for PAWC and American Water from 2004 to 2007. Trends in premium expense for PAWC are consistent with those of American Water as a whole. (Percentage changes from 2004 to 2007 for both PAWC and American Water are also shown in *Exhibit IV-40*.) With the exception of workers' compensation, property, and excess liability coverage, premium expense has been flat or decreasing. With these other coverage types, American Water management believes that it has been fairly aggressive in attempting to contain costs, despite, for example, increasing replacement costs for property coverage and increasing limits for excess liability coverage.

Exhibit IV-40
Annual Insurance Premium Expense, Other Than Group, for PAWC and American Water
2004 to 2007

Type of Coverage	1/1/04 to 1/1/05*		1/1/05 - 1/1/06		1/1/06 - 1/1/07		1/1/07 - 1/1/08		% Change	
	PAWC	AW	PAWC	AW	PAWC	AW	PAWC	AW	PAWC	AW
Property & Casualty										
General Liability	\$6,269,540	\$18,241,216	\$6,252,430	\$17,999,170	\$5,524,455	\$16,297,190	\$5,612,452	\$16,582,488	-10.5%	-9.1%
Workers' Compensation	\$1,628,569	\$9,975,064	\$1,576,067	\$10,733,464	\$1,711,323	\$10,743,810	\$1,932,900	\$10,982,807	18.7%	10.1%
Auto Liability	\$481,382	\$3,123,261	\$324,055	\$2,464,670	\$249,780	\$2,143,232	\$270,965	\$1,851,414	-43.7%	-40.7%
Excess Liability	\$494,237	\$3,741,748	\$527,032	\$3,763,400	\$481,125	\$3,260,886	\$883,216	\$5,814,394	78.7%	55.4%
Property	\$642,592	\$4,650,000	\$876,877	\$5,057,011	\$999,458	\$5,758,224	\$1,124,009	\$5,978,941	74.9%	28.6%
Financial Products										
Employment Practice Liability	\$29,980	\$222,862	\$25,131	\$210,102	\$23,011	\$156,000	\$22,481	\$148,000	-25.0%	-33.6%
Fiduciary Liability	\$25,169	\$187,100	\$22,783	\$202,807	\$23,681	\$160,542	\$23,874	\$157,169	-5.1%	-16.0%
Comprehensive Crime - Employee Dishonesty	\$13,322	\$111,375	\$9,807	\$81,984	\$14,072	\$95,397	\$12,000	\$79,000	-9.9%	-29.1%
Special: Kidnap & Ransom	3 Yr included in 2002		\$816	\$6,822	\$1,212	\$8,216	\$2,296	\$15,113	181.4%	121.6%
Directors & Officers Liability	Provided by RWE beginning January 10, 2003, without any premium charge.									
Travel Accident	3 Yr included in 2002		\$3,358	\$28,075	3 Yr included in 2005		3 Yr included in 2005			
Retrospective adjustments**	\$747,329	\$3,103,604	\$387,145	\$1,694,792	(\$1,179,695)	(\$4,597,345)				

* Inception/anniversary date of PAWC's annual policy period for property and casualty insurance, prior to acquisition by RWE, was October 1. Once the acquisition was approved on January 10, 2003, RWE instructed PAWC to extend its October 1, 2003 expiration to January 1, 2004 to coincide with the anniversary date of RWE's global insurance program.

** Retrospective adjustments include loss-sensitive insurance, including general liability, workers' compensation, and auto liability beginning with each policy period from 1975 to 2006.

Source: Information Response 387

American Water self-funds general liability (also including products coverage), automobile liability, and workers' compensation insurance through large retentions, as shown in *Exhibit IV-41*.



Exhibit IV-41
Self-Funding Retentions
as of December 31, 2007

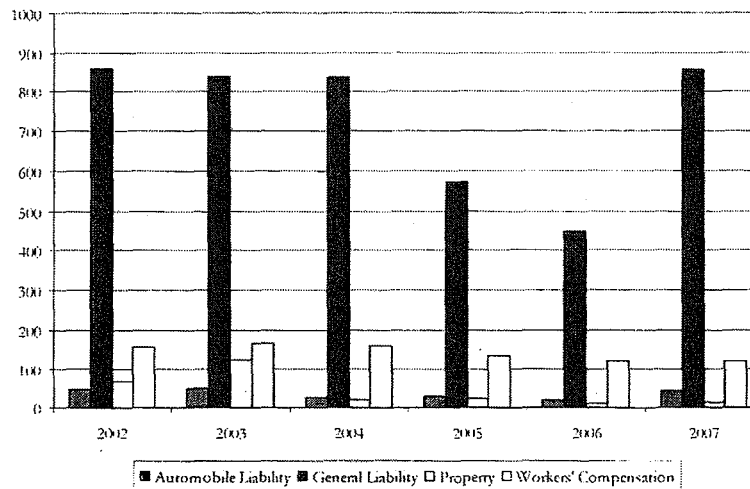
	Retention Per Occurrence
GL	\$1,000,000
AL	\$500,000
WC	\$500,000

Source: Interview 41

Claims History (#/\$)

Exhibit IV-42 displays the number of claims by accident year: 2002 to 2007. For all types of claims (AL, GL, PR, and WC), PAWC's number of claims generally have been decreasing until 2007, when the number of AL and GL claims increased significantly to the levels experienced during 2002 to 2004.

Exhibit IV-42
PAWC Claims By Accident Year
2002 to 2007



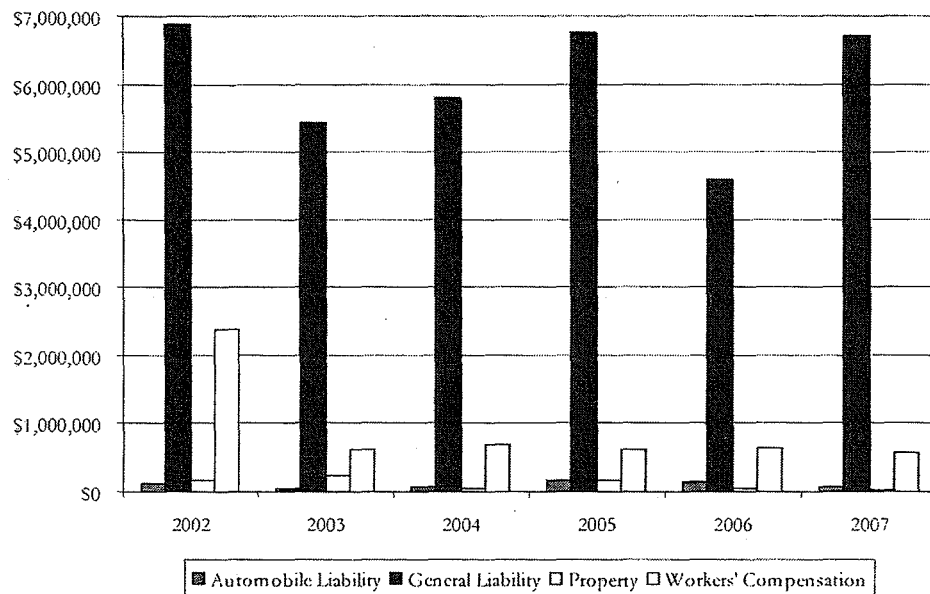
	2002	2003	2004	2005	2006	2007	Compound Growth/Loss
Automobile Liability	44	50	27	30	21	43	-0.5%
General Liability	861	839	837	573	451	856	0.0%
Property	67	124	19	23	11	13	-3.2%
Workers' Compensation	157	165	161	135	122	122	-0.5%

General liability includes product coverage.
Source: Information Responses 119 and 730

Although the number of AL claims incidents were higher again in 2007 (as PAWC reports all incidents, including those not caused by company drivers), PAWC's total incurred dollars were less than any previous year except 2003. The number of GL claims were also higher in 2007, due primarily to severe and fluctuating weather patterns in the Northeast United States according to PAWC management.

Exhibit IV-43 displays the dollars incurred for PAWC claims by accident years 2002 to 2007. For AL, PR, and WC claims, dollars incurred by PAWC generally have been decreasing. For GL claims, however, the dollars incurred by PAWC have varied substantially by year (the dollars increased in 2007 after decreasing in 2006 following a general increase for the prior three years).

Exhibit IV-43
\$ PAWC Claims Incurred By Accident Year
2002 to 2007



	2002	2003	2004	2005	2006	2007	Compound Growth/Loss
Automobile Liability	\$110,673	\$47,426	\$83,600	\$164,797	\$150,933	\$65,094	-10.1%
General Liability	\$6,891,609	\$5,425,615	\$5,788,737	\$6,759,073	\$4,583,954	\$6,710,623	-0.1%
Property	\$166,014	\$240,837	\$53,215	\$160,765	\$45,586	\$18,918	-4.3%
Workers' Compensation	\$2,375,784	\$616,801	\$688,651	\$636,567	\$654,146	\$578,065	-2.8%

2002 includes two outstanding claims totaling \$1,514,000.

Source: Information Responses 119 and 730

As with the number of claims in *Exhibit IV-42*, the dollars associated with GL claims were also higher in 2007, due primarily to severe and fluctuating weather patterns in the Northeast United States according to PAWC management.



Exhibit IV-44 illustrates PAWC's 2002 to 2007 loss control expenditures and claimed losses for AL and WC claims.

Exhibit IV-44
PAWC Loss Control Expenditures as % of Claimed Losses
2002 to 2007

	2002	2003	2004	2005	2006	2007
Loss Control Expenditures	\$115,063	\$79,667	\$82,054	\$73,852	\$222,390	\$104,839
Claimed Losses	\$2,486,457	\$664,227	\$772,251	\$801,364	\$805,079	\$643,159
	5%	12%	11%	9%	28%	16%

2002 includes two outstanding claims totaling \$1,514,000.
Source: Information Responses 119, 120, and 730

The Operational Risk Management organization associates loss control expenditures only with AL and WC claims, and specifically excludes GL/product liability claims. That is because PAWC's Operational Risk Management organization believes that it cannot affect the number and/or outcomes of main breaks and associated liability claims through regular Operational Risk Management activities. (Examples of loss control expenditures include safety training, safety talks, and other activities designed to prevent or control AL or WC claims, etc.) Also, in calculating loss control expenditures, the organization also typically excludes security costs because it considers security a deterrent as opposed to a loss prevention technique. This consideration arises because the organization can put security devices in place to deter potential perpetrators from causing harm to company property but cannot affect the behavior of someone from outside the PAWC organization if his or her intent is to bring harm to company property.

Approximately 62% of PAWC's GL claims typically involve main breaks, which American Water indicates are due primarily to factors such as aging of infrastructure, weather conditions (causing pipe contractions in winter (primarily December, January, and February) and summer (primarily June, July, and August)), significant variations in elevations, etc. As such, in *Exhibit IV-44*, American Water excluded GL/property claims in calculating the dollar amount and associated percentage of annual expenditures for its loss prevention programs. (As stated previously, that is because the risk management function says it cannot affect the number and/or outcome of main breaks and associated liability claims.) One of the areas in PAWC's service territory that has received considerable press coverage with regard to main breaks has been the western PA area. In late 2003, PAWC initiated engineering solutions in this area and completed them in early 2005 whereby pressure relief valves (PRVs) were installed in its mountainous-terrain regions. PAWC management indicates that it reduced PR claims in this area by 15% in the first year of the program.

The majority of PAWC's insurance claim payments between 2002 and 2007 have been the result of GL/property damage (PD) claims (between 74% and 91% in the time period shown in *Exhibit IV-43*). For example, in 2007, GL/PD claims accounted for approximately 91% of claims payments.

Therefore, American Water introduced a GL/PD initiative in 2004 whereby PAWC took an aggressive (and unusual) position in declining to accept all property damage claims as a result of main and service line breaks. American Water management based this initiative on Elizabethtown Water Company's success, as a result of precedence established through litigation in NJ, and its ability to also prevail upon appeal, which had modest success (in NJ). American Water management realized that this initiative failed to consider that common law was not consistent in the jurisdictions across the country. Therefore, the initiative was modified to a more reasonable position, in which PAWC's insurance company was able to mitigate losses by establishing criteria for accepting claims where negligence was likely to be found in favor of a claimant. Such favorability for a claimant tended to arise when it could be established that PAWC had either a history of line breaks in the area or when the company was late or unduly delayed in responding to the claim.

Schumaker & Company believes that PAWC can impact GL claims through proper main repair and replacement programs. Refer to *Chapter IV – Water Operations* and *Chapter XI – Operational Performance* for further discussion of such programs.

Findings & Conclusions

Finding IV-39 A formal enterprise risk management program was established in 2003 when RWE acquired American Water, but this program must now evolve as American Water (and therefore PAWC) changes its focus to SEC/SOX compliance.

With regard to overall risk management, American Water management believes that, although the risk management community across the country has discussed enterprise risk management (ERM) for the past ten years, ERM was implemented across American Water when RWE acquired the company in 2003. According to American Water management, formality of the ERM program occurred when RWE acquired American Water. As a result of legislation in Europe and the United Kingdom, all publicly-owned European companies, including RWE, were required to identify all risks that could have an adverse financial impact. RWE provided American Water with a risk management toolkit and process that enabled American Water to formally identify its risks as well as retain, mitigate, transfer, accept, or decline those risks. Additionally, management and Board members in Europe can be civilly and criminally prosecuted; and American Water management indicates that if the company experiences adverse financial impacts they can, as well. Among the formal activities taken as part of American Water's ERM are the following:

- ◆ Documentation
 - Risks
 - Responsible individuals
 - Responsibilities
 - Practices



- ◆ Categorization of risk
 - Financial
 - Operational
 - Structural
 - All other
- ◆ Analytical tools (Excel spreadsheets ~24 modules)
 - Type of risk
 - Assessment if risk exists
 - Quantification
 - Qualification (probability)
 - Priority

The ERM process was established in 2003 to identify and evaluate business risks. By focusing on key uncertainties—either risks or opportunities—and factoring them in to business plans, American Water management believes it is better prepared to achieve its business objectives. The goal of American Water's Risk Management Committee (RMC) is to maximize the potential for gain and minimize the potential for loss associated with uncertain events. American Water management believes that this diversity allows PAWC to discuss and act on unnecessary risks and to effectively manage accepted risks by fostering risk awareness and establishing a value-driven risk culture.

The American Water organization uses a bottom-up ERM process. In Pennsylvania, it starts with business units (BUs) developing their key top risks (report/heat map) through the use of American Water analytical tools. These reports must be approved by the State President (prior to having State Presidents, the risk owner in the BUs approved the list of risks). This information is then provided to the regional organizations, which follow a similar process. The Southeast Region Risk Operations Management Committee (ROMC) meets approximately three times annually and is composed of a cross-section of individuals from all PAWC/Southeast Region functions, including:

- ◆ Director, Engineering
- ◆ Director, Production
- ◆ Director, Network
- ◆ Director, Legal
- ◆ Director, Human Resources
- ◆ Director, Maintenance Service
- ◆ Director, Customer Service
- ◆ Director, External Affairs
- ◆ Director, Business Development
- ◆ Director, Environmental Compliance
- ◆ Manager, Operational Risk (2)
- ◆ Director, Business Performance
- ◆ Manager, Network

- ◆ Manager, Production
- ◆ Director, Finance
- ◆ Director, Risk Management

The regional reports must be approved by the respective Region President. In PAWC's case, it is currently the Southeast Region President, although American Water management indicates that this may change as the company reorganizes and decentralizes.

Finally, the ERM process reaches the American Water level, where another series of analyses and reports occurs. At that level, the RMC is involved. The RMC was established in 2003 (when the ERM process began) to identify and evaluate business risks and is composed of the Executive Management Team (EMT) (Chair, President, COO, CFO, General Counsel, SVP Communications, VP Internal Audit) and designated risk management representatives. The Director of Financial Risk Management serves as Secretary of this committee. The RMC typically meets three times annually. The last RMC meeting was scheduled for September 2007 but was postponed until October 2007.

For approximately the last year (2007), American Water has been studying options to modify its ERM process. The aim of this evaluation is to adapt from compliance with European legislation to governance under Security & Exchange Commission (SEC) regulations and Sarbanes-Oxley (SOX) requirements. This adaptation process is spearheaded by the VP Internal Audit (IA), the Director of Financial Risk Management, and the Assistant General Counsel, who are having discussions with EMT members about possible changes. When asked about what kind of changes, the Director of Financial Risk Management indicated that American Water is attempting to make its risk model more consistent across the entire American Water organization via an investigation of software for improving the analytical tools currently in use.

Recommendations

Recommendation IV-38 Develop a formal implementation plan for changing the focus of the ERM process to include SEC/SOX compliance. (Refer to Finding IV-2.)

The American Water organization has appropriately recognized the need to change the focus of its ERM process to include SEC/SOX compliance; however, all investigations and analyses to date to effect that change have been informally conducted. A formal implementation plan that identifies steps and associated timelines and resources should be developed, monitored, and reported to senior management.



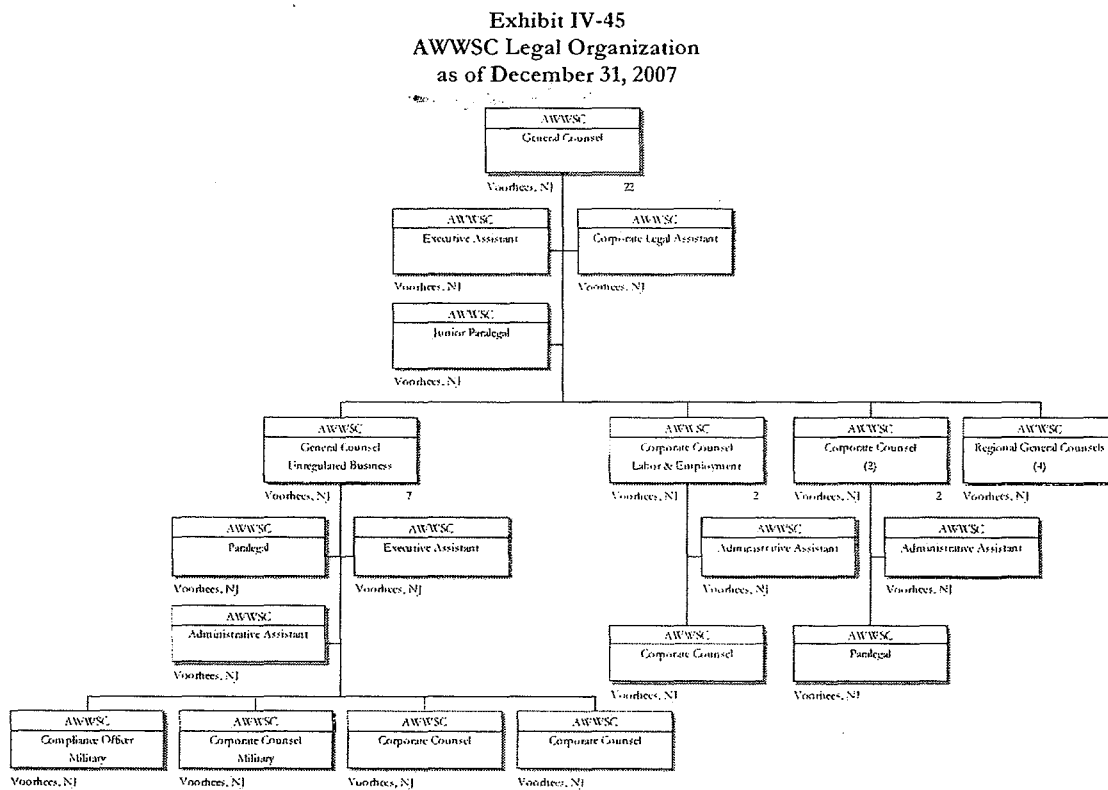
F. Legal Services

This section provides a discussion of legal services provided by American Water Works Service Company (AWWSC) on behalf of Pennsylvania-American Water Company (PAWC).

Background & Perspective

Organization & Staffing

The AWWSC Legal organization is shown in *Exhibit IV-1*.



Source: Information Response 257 and Interview 51

The Legal organization, headquartered in Voorhees, New Jersey (NJ), is led by the Senior Vice President (SVP) Legal & General Counsel (GC). This organization as a whole is responsible for providing legal services to all American Water businesses. The Voorhees Legal group (also referred to as the Legal

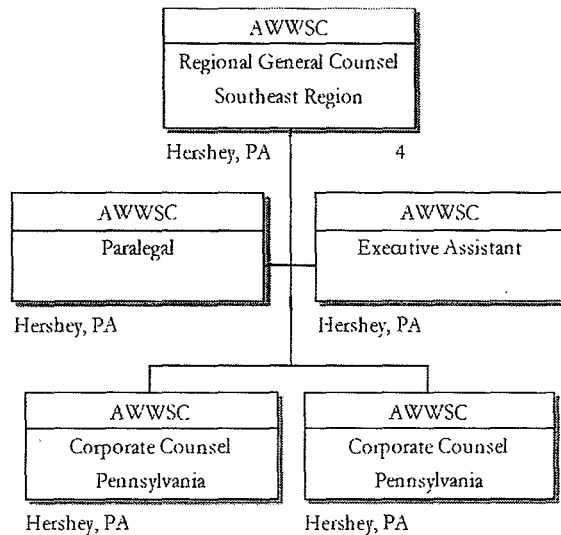
business center) primarily is responsible for providing legal services to American Water unregulated businesses as well as providing subject matter experts (SMEs), typically in labor/employment and securities areas, for American Water, as a whole, or to all regulated and unregulated businesses. The Legal business center in Voorhees is composed of the following functions:

- ♦ An Unregulated Business group that provides services to only the American Water non-regulated entities.
- ♦ A Labor & Employment group that provides services to American Water entities, primarily other AWWSC departments and state utility organizations (such as PAWC), if external counsel is not designated by a Regional General Counsel (RGC). Even then, an RGC often confers with this group, because many of the RGC organizations do not have specific expertise in this area. It is typically a joint decision as to whether internal or external resources are used. The Corporate Counsel who heads this group is also American Water's internal compliance officer. In this secondary role, the CC is responsible for monitoring the hotline (staffed externally), although very few calls come from Pennsylvania, a tendency which the General Counsel attributes to a long, continuous, stable management and the resulting culture. As internal compliance officer, the CC performs the following:
 - Reviews each hotline call
 - Approves each hotline call
 - If approved, often involving discussions with Internal Audit, assigns someone internally to investigate, usually someone from the Human Resources (HR) or Legal organizations.
 - Performs database monitoring and maintenance of calls
- ♦ A Securities & Commission group headed by another CC, who has been very focused on the divestiture.
- ♦ A General Corporate group, also headed by another CC.

Additionally, four Regional Counsel organizations report to the SVP Legal & General Counsel. One of these Regional Counsel organizations is the Southeast Regional Counsel organization, shown in *Exhibit IV-46*, which is headquartered at the Pennsylvania-American Water Company headquarters' office in Hershey (Pennsylvania). The headquarters' office in Hershey is the sole location where attorneys who provide legal services to PAWC reside. Also reporting to the Southeast Region RGC is a Charleston (West Virginia) office that provides legal services to Virginia, Maryland, and West Virginia, and a Lexington (Kentucky) office that provides legal services to Kentucky and Tennessee. The primary reason given for having legal resources dedicated to Pennsylvania within the region is the size and scope of PAWC's operations and its associated legal issues, including the state's Chapter 56 PaPUC customer service regulations, which American Water considers to be more stringent than many other states' regulations.



Exhibit IV-46
AWWSC Southeast Region Legal Organization Providing PAWC Legal Services
as of December 31, 2007



Source: Information Response 1 and Interview 12

The old RGC structure was to have the RGC reporting to Regional Presidents, with dotted line reporting to the GC. The GC believes that the structure of the Legal organization should follow how the business really functions, an aim he feels the Legal organization accomplishes. Specifically, RGCs now simultaneously report to State Presidents, who report to Division Presidents, and to the GC. Little change has occurred (or is expected to change) in the Southeast Region. Although American Water only recently shifted in late 2007 from a regional focus to a state focus, attorneys in the Southeast Region previously resided in individual states. This is not necessarily true for other regions, where centralization at the regional headquarters may be more prevalent. Because each RGC is really a GC for the region, it is up to the RGC to determine how to handle their operations. In essence, the American Water GC is primarily a sounding board for each RGC. The RGCs make their own decisions. For example, each RGC decides the mix of internal versus external counsel use. The GC is involved in making offers to attorneys. He is typically not involved in the initial interviews of candidates for regional attorney positions (except those applying for the RGC position); however, the GC may be involved in the final interview process. The GC makes a determination regarding the extent to which he will be involved in the final candidate interviews based on a review of the candidate's background and discussions with the RGC. He also can veto a RGC's recommendation if he desires.

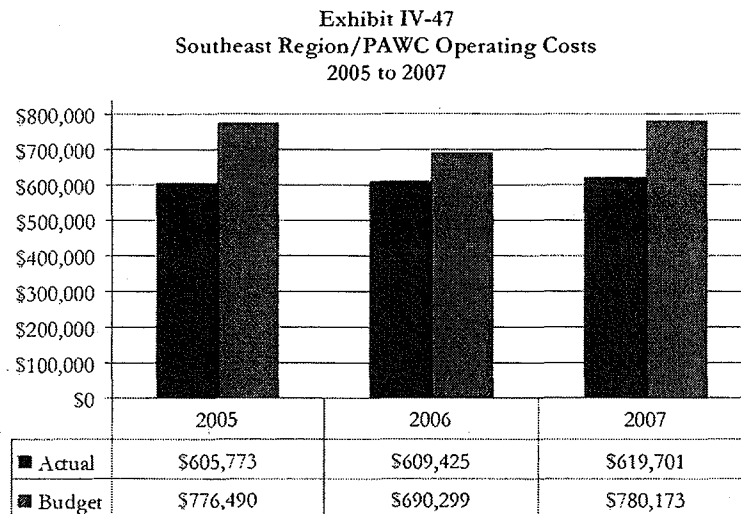
The regional attorneys are typically generalists, with varying backgrounds and areas of expertise, who are able to handle a broad spectrum of issues. Although the Corporate Counsel attorneys in Hershey primarily provide Pennsylvania services, they may perform occasional services to American Water, as a whole, or to other states in the Southeast Region. (As discussed in *Chapter VIII – Affiliate Interests*, the

AWWSC time reporting system allows attorneys to specify a code when recording their time, which is used by the AWWSC cost allocation module to indicate what groups benefit from their services and allocate costs accordingly.) An example is a document-retention policy-review project that got under way in late 2006 and is being spearheaded by one of the Hershey-based attorneys.

The Southeast Region attempts to handle legal services internally, if it can; however, in some situations, it requires external resources: either AWWSC corporate resources or local outside organizations. When using these resources, the Regional General Counsel for the Southeast Region estimates that approximately 25% of the time, the region does not have enough time to perform the required services. The other approximately 75% of the time, it requires subject matter expertise, typically involving human resources/employment, environmental, rates, or litigation issues. The RGC's philosophy has been to use local legal firms for litigation, although it has used AWWSC corporate or local resources for other issues.

Expenditures

Exhibit IV-47 illustrates operating costs (excluding outside counsel costs) for PAWC for 2005 to 2007.



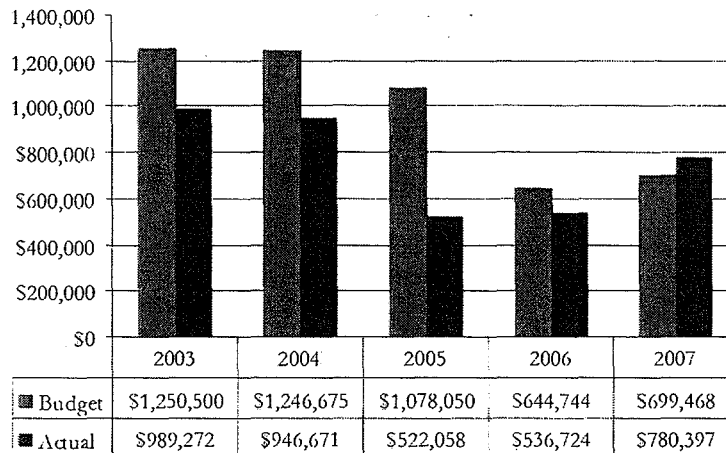
Source: Information Responses 121 and 622

Information is not available prior to 2005 as the reorganization creating the regional AWWSC organizations was primarily implemented during 2004, when most of the Legal headcount transferred to the regional AWWSC organizations at the end of 2004. Therefore, no 2002 or 2003 regional data exists, and no meaningful 2004 data exists due to the timing of the transfers. In the last three years, PAWC's portion of the Southeast Region AWWSC organization's operating expenses have been budgeted at approximately 60% of the entire region, as Pennsylvania is the largest state within the region. Actual expenses were roughly 54% in 2005 and 2006, but increased to roughly 59% in 2007. *Exhibit IV-15*



displays PAWC's outside legal costs for the 2003 to 2007 time period. According to AWWSC management, outside legal counsel costs are generally decreasing over time, as the AWWSC Southeast Region Legal organization has made an attempt to increase its use of internal resources, except in those cases where it lacks the time or expertise to do itself.

Exhibit IV-48
PAWC Outside Legal Counsel Costs
2003 to 2007



Source: Information Responses 121 and 731

Major Processes and Systems

Processes

Each of the Regional General Counsels interacts with each other (every one to two months) via conference call. The purpose of these calls is to identify legal trends and to provide professional development opportunities. Approximately two times annually, face-to-face meetings are held. At one of these meetings, the RGCs meet with the GC. At the other meeting, the RGCs meet for one to two days in conjunction with all AWWSC attorneys. At least one of these days is focused on professional development.

Each of the Regional General Counsels provides a monthly report to the General Counsel. This report includes both legal issues and a spreadsheet showing dollars involved in those issues where such dollars are applicable. From that report, the GC provides information to the American Water Board (pending major legal issues, not all, not materiality based) and to the Accounting function for SFAS 5 adherence (spreadsheet of material costs).

Any time spent by AWWSC attorneys (as with other AWWSC employees) in providing services to all business units is recorded on weekly time sheets. The time spent providing services directly to regulated

or non-regulated business units (BUs) (such as PAWC) are directly charged to the billing number specific to those BU(s). The time spent providing services in common with similar services that are provided to other regulated and non-regulated BUs is allocated based on formulas as discussed in *Chapter VIII – Affiliate Interests*. In the Southeast Region, time spent by those Corporate Counsel (CC) employees in Pennsylvania generally defaults to PAWC (while time for those in other states default elsewhere), unless the CC specifically identifies hours to a different code. Meanwhile, the time spent by the Regional General Counsel generally defaults to all states within this region unless the RGC specifically identifies hours to a different code.

Systems

The Legal organization uses Hummingbird's DOCS Open software (PC DOCS) to store, locate, share, and manage document-based information, such as deeds, easement documents, etc. This software, however, is not being used to store all Legal documents. DOCS Open is a client/server, Windows-based solution that gives organizations the ability to create centralized repositories, or libraries, that contain unstructured data generated by the organization. Search and retrieval tools make this information easily available for use and collaboration across the entire enterprise. Although DOCS Open is not used as a case management tool, the Legal organization can use it to associate a document with other documents.

In anticipation of having to be Sarbanes-Oxley (SOX) compliant when American Water is no longer a part of RWE AG of Essen, Germany (RWE) and becomes a public company, in 2007 AWWSC began to identify, assemble, image, and store electronically all major documents, including contracts, debt covenants, and commitment/contingency documentation, in a legal vault using SharePoint software. By May 1, 2007, American Water Works Service Company had all of these legacy documents completed and available on the SharePoint internal site. Subsequently, the Legal organization has taken several steps to ensure that these types of documents are being handled correctly. Those steps are as follows:

- ◆ Before any contract can be entered into, a contract approval form must be properly completed and signed by persons with the requisite signing authority, including (where required) review by the Legal, Finance, and/or Supply Chain organizations. Once a contract has been executed by all parties, a copy of the contract and the completed contract approval form must be scanned into portable document format (PDF) and sent to the Legal organization.
- ◆ A checklist for debt instruments has been created, of which the Legal organization is the holder and performs a quarterly review (in conjunction with other American Water personnel) to make sure that each instrument is in compliance.
- ◆ When reviewing contract approval forms, all commitments and contingencies must be identified so that the Finance organization is held responsible for monitoring and tracking these items.



Findings & Conclusions

Finding IV-40 When looking to outside legal organizations for help in addressing PAWC's legal needs, the Southeast Region Legal organization does not rely on competitive bidding to develop a master list of pre-qualified legal firms.

Competitive bids are not used to develop a list of preferred external counsel firms (as PAWC had longstanding relationships with many firms), nor does PAWC periodically request competitive bids from external legal firms to ensure that cost-effective rates are being provided by these firms. Generally, only in the case of selected projects does the Southeast Region issue RFPs.

Therefore, the Southeast Region uses a number of outside legal organizations, many of which it has used for many years as AWWSC management knows and respects their capabilities and values their institutional knowledge of PAWC and its operations. PAWC has long term relationships with several firms, which handle certain special practices areas. Included among these legal organizations are Morgan Lewis (regulatory), Dechert/Reed Smith (tax), and LeBouef, Lamb, Green & MacRae (environmental), as well as others. AWWSC management may go directly to one of these firms, may request estimates from several organizations, or, when knowledge of PAWC is not critical (and time/materials is an option) may issue a request for proposal (RFP). It does not periodically issue an RFP to establish a pre-qualified list from which to choose. It can informally add external law firms, as needed. During 2007, for example, PAWC used the services of 15 law firms, ranging in size from hundreds of attorneys to one person operations. Three of the firms were new to PAWC in 2007; two others were new to the company in 2006. One of the most substantial regulatory matters during 2007 was PAWC DSIC petition, for which it used a new firm relationship (Saul Ewing) for the first time.

Approximately four years ago (2003), the Legal organization worked closely with AWWSC's procurement function to analyze how to obtain the best service for reasonable dollars. Specific activities performed during this analysis were:

1. Development of standard rules of engagement for engaging and retaining the services of law firms.
2. Review and assessment of the 2003 Pennsylvania rate-case expense for outside legal counsel and consultants.
3. Development of a sourcing strategy for outside legal services in the practice areas of condemnation defense, labor and employment, operation and maintenance, Pennsylvania Infrastructure Investment Authority project loans, and regulatory matters.

The sourcing strategy focused on a make/buy (internal/external) analysis and the creation of preferred external-counsel firm relationships, where the use of external resources was considered preferential to the use of internal attorneys.

The lack of having such a pre-qualified list does not indicate that external legal costs are increasing. (*Exhibit IV-48*, in fact, shows that they have been generally decreasing). It may, however, indicate that PAWC is not saving as much as it could (as having a pre-qualified list could force law firms to contain/limit their costs/charges to PAWC) or is failing to identify other potential candidates for provision of service. Schumaker & Company is unable to quantify savings, if any, because of lack of data. When we asked AWWSC management how it controls costs, the Legal organization asserted that it monitors outside firms through the use of the engagement letter it has with each firm and ensuring that services provide agree with the letter. The Southeast Region does not use a software system to track cases/matters or the internal/external hours associated with each, although it does require outside legal firms to report by project. (Refer to *Finding IV-2* for further discussion about AWWSC legal systems.)

The use of competitive bidding is not to say that evaluations of external law firms for a pre-qualified list should be solely based on cost. Other factors, such as competence, experience, depth, credibility, reputation, relationships, institutional knowledge, and other intangibles must also be considered, especially for crucial litigation, such as rate cases, etc.

Finding IV-41 The AWWSC Legal organization has not evaluated the use of standard legal management software across its various entities; therefore, the Southeast Region (and ultimately PAWC) may not be benefiting from processes associated with the use of a "best in class" system.

Unlike private organizations where consistency in systems is important, at American Water no single legal management system exists for performing functions such as:

- ♦ Tracking matters and caseloads
- ♦ Recording inside lawyer time and expenses against cases/matters
- ♦ Billing back clients through the Finance organization
- ♦ Tracking and reporting outside counsel expenditures
- ♦ Compiling metrics and benchmarking statistics
- ♦ Preparing service level arrangements (SLAs) for clients
- ♦ Recording and monitoring client budgets
- ♦ Handling routing lists for outside counsel invoice approvals
- ♦ Tracking files both onsite in central files and offsite

Now that American Water is becoming a public organization (with its SOX compliance issues), management realizes that it needs to build process and system uniformity; however, the GC is not sure when or if the Legal organization will look at standardizing systems in the near future. That is because American Water has been too busy with SOX compliance. Also, the GC believes that cost and disruption must be considered before changing systems, as he believes that current practices are working. Nevertheless, standardization of systems should be formally considered, and, at the same time, an investigation is warranted to see if implementation of alternative systems, such as case/matter



management tools, would be beneficial to AWWSC legal entities, including the Southeast Region organization supporting Pennsylvania.

Recommendations

Recommendation IV-39 Establish a formal mechanism for developing a pre-qualified list of external legal firms by periodically reviewing proposals from potential candidates. (Refer to Finding IV-2.)

Within utility legal organizations, the best practices for identifying external legal firms typically result from the periodic issuance of an RFP. Such a strategy helps uncover potential candidates for inclusion in a pre-qualified list of external legal firms. A legal organization should periodically (at least every three to five years) develop a pre-qualified list of external legal firms. By using such a process, a legal organization not only formally provides alternative legal firms that it may not have considered in the past, but it helps to ensure that it receives quality legal services at a reasonable cost by encouraging containment of costs by the firms used.

Recommendation IV-40 Perform a formal cost/benefit analysis regarding standardization of legal management software throughout the American Water system. (Refer to Finding IV-14.)

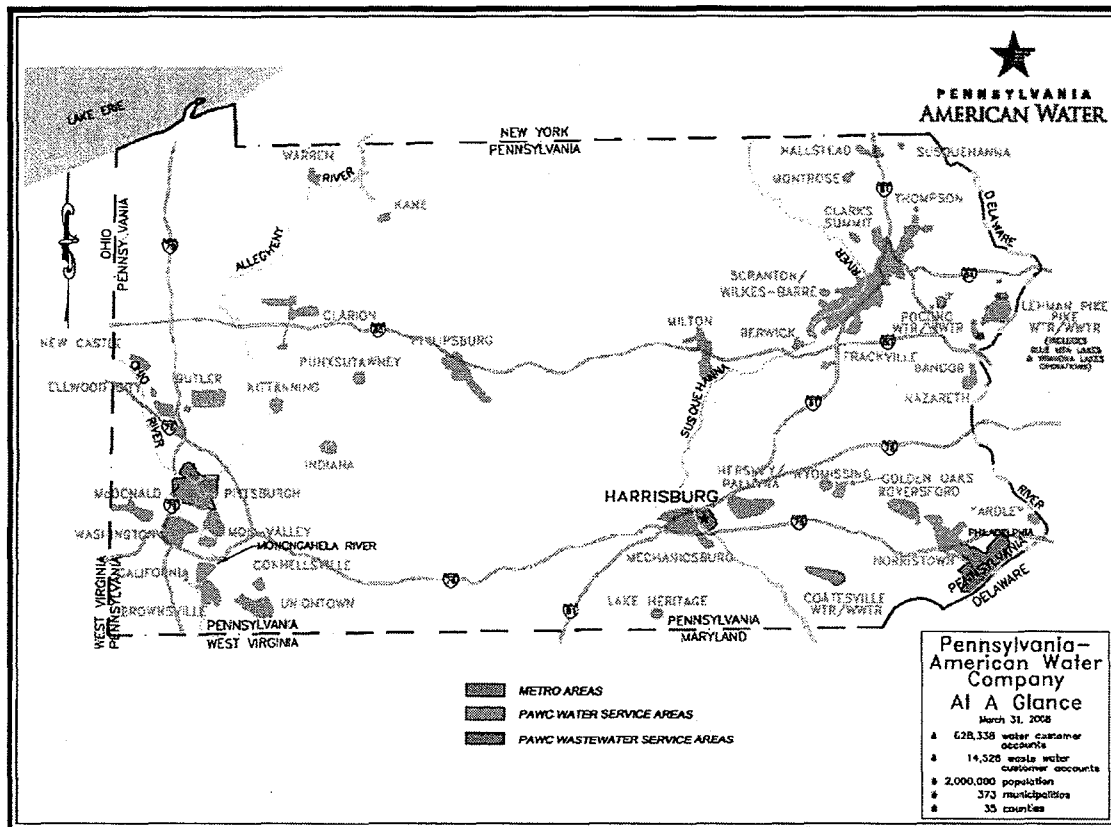
As part of its investigation into the appropriateness of standardizing American Water legal management software, Legal management should evaluate case/matter management software, including reporting tools, for the functions previously described. Management should also consider e-invoicing software to manage receipt, validation, routing, approval, and payment of invoices from external law firms.

For these functions, American Water should not only consider systems that it currently uses in some of its legal entities but should also open the investigation to "best in class" systems currently found in the industry. Any investigation must not only look at quantitative benefits and costs, but also consider qualitative benefits and costs.

V. Water Operations

Pennsylvania-American Water Company (PAWC) operates and manages approximately 35 different water district across Pennsylvania as shown in *Exhibit V-1*.

Exhibit V-1
PAWC Water Districts
as of December 31, 2007



Source: Information Response 136

Water district operations statistics are shown in *Exhibit V-2*.



Exhibit V-2
Water District Statistics
as of December 31, 2007

Water District	Estimated Service Area (square miles)	Customers		
		Water	Wastewater	Employees
Pittsburgh	131	132,208		174
McMurray	319	49,701		63
Mon-Valley	92	21,835		26
Uniontown/Connellsville	42	13,762		19
Brownsville	19	4,359		8
New Castle / Ellwood	71	24,957		48
Buder	49	16,529		27
Indiana	13	7,362		14
Punxsutawney	14	3,588		8
Clarion	46	4,042		9
Kittanning	2	1,998		4
Warren	12	5,452		7
Kane	11	2,123		6
Norristown	43	30,855		32
Yardley	20	12,107		13
Abington	13	5,543		7
Susquehanna	23	2,602		8
Bangor	8	3,614		8
Nazareth	39	9,351		9
Poconos	17 \1	10,915		6
Poconos Wastewater			4,774	5
Wyomissing - Glen	48	8,678		6
Mechanicsburg	60	35,608		42
Hershey	53	17,276		14
Wyomissing - Penn	16	11,570		12
Royersford	51	14,053		13
Coatesville Water	28 \2	11,053		18
Coatesville Wastewater			5,892	9
Lake Heritage	1	814		0
Lehman Pike Water	13 \3	6,086		11
Lehman Pike Wastewater			3,910	1
Milton	76	12,172		24
Philipsburg	109	7,262		11
Berwick	8	6,180		7
Frackville	3	2,345		4
Scranton/Wilkes-Barre	221	134,094		207
Corporate				101
Total	1,671	630,094	14,576	981

\1 There are three square miles of wastewater service territory within the company's water service territory footprint.

\2 There are two square miles of wastewater service territory within the company's water service territory footprint.

\3 There are three square miles of wastewater service territory within the company's water service territory footprint.

Source: Company Comments in Task Report Response

Each of these water districts contain:

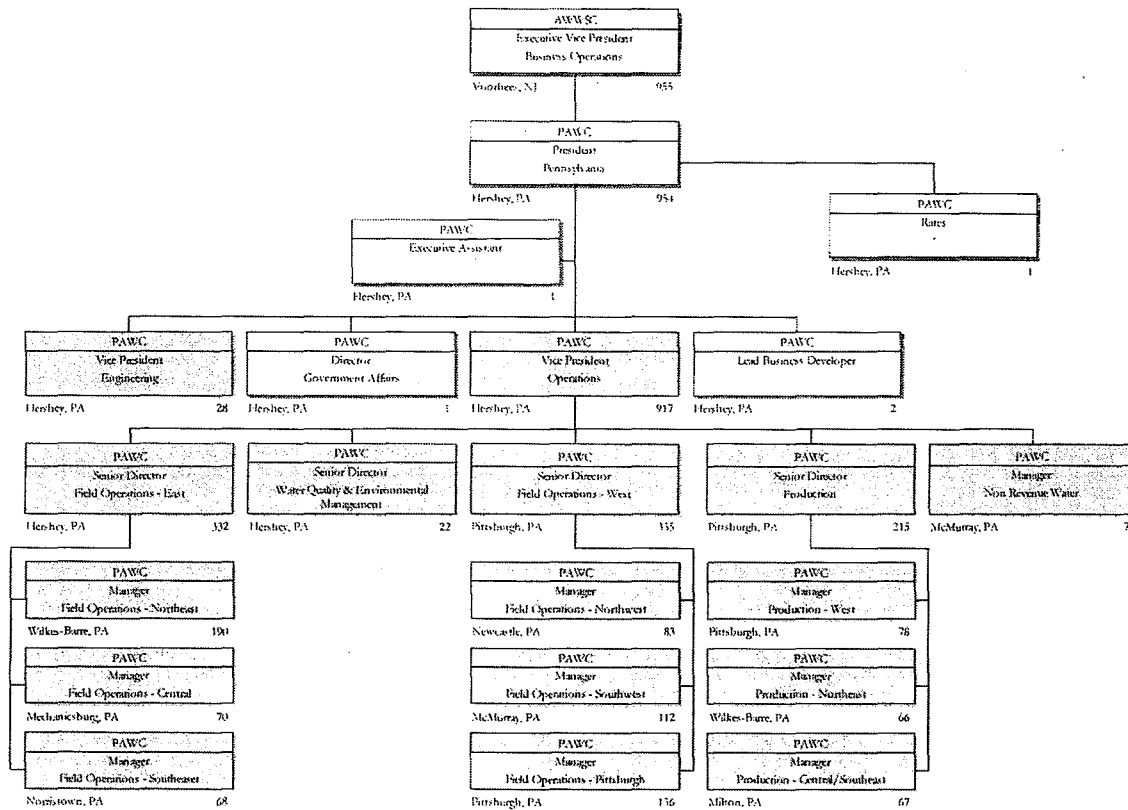
- ◆ *Water Source* – Either a surface water source from rivers or reservoirs or ground water from wells. Most of PAWC's water sources are surface water. In some water districts, water is purchased from a neighboring water system.
- ◆ *Water Treatment Facility* – One or more water treatment plants in each district or connections to neighboring water utilities to purchase water. For example, all water in the Connellsville system

is purchased from a third party. Water in the Uniontown system is purchased from a third party or transferred from PAWC's Brownsville system.

- ◆ *Water Distribution Network* – underground piping, above-ground storage tanks, and booster stations.
- ◆ In some water districts, PAWC also operates wastewater treatment facilities.

Water operations are performed by two major groups and four support groups within PAWC/American Water, as shown in *Exhibit V-3* with the highlighted boxes.

Exhibit V-3
PAWC Water Operations Organization
as of December 31, 2007



Source: Information Response 257 Addendum

* Dual reporting to Finance and dotted line reporting to the PAWC President

These two groups are:

- ◆ *Production* – PAWC employees who are responsible for the operations and maintenance of water productions facilities (i.e., treatment plants and filter facilities). There are approximately 215

employees located in the production area

- ♦ *Field Operations (Network)* – PAWC employees who are responsible for the distribution of the water from the production facilities to the individual customers. Most U.S. water companies refer to this group as the distribution organization, whereas the term network is generally used in Europe. There are approximately 667 employees located in the field operations (distribution/network) area.

In addition, the following organizations provide critical support to the above groups, specifically:

- ♦ *Engineering Department* – The PAWC Engineering Department is responsible for providing engineering technical support, design, and construction management to both production and network facilities. There are approximately 28 employees located in the engineering area.
- ♦ *Water Quality and Environmental Management* – This group is responsible for water quality at each of the plants and for other environmental matters. On an operational basis, much of the basic water-quality sampling and testing is done by plant personnel; however, this group is responsible for performing more complicated testing and for providing oversight for all plants relative to environmental issues. There are approximately 22 employees located in the water quality and environmental management area.
- ♦ *Maintenance Services* – The American Water Maintenance Services organization is responsible for providing various technical and testing services in support of ongoing maintenance of PAWC production and, to some extent, network facilities. At the start of our review in July of 2007, Maintenance Services was a separate part of the PAWC Operations. The group has since been moved to American Water Works Service Company (AWWSC) (national versus Pennsylvania only) during the recent reorganizations which occurred during the first quarter of 2008. There are approximately 22 employees located in the maintenance services area.
- ♦ *Non Revenue Water* – This group is responsible for non-revenue and unaccounted-for-water monitoring and reporting processes throughout PAWC. There are seven employees located in the non-revenue water area.

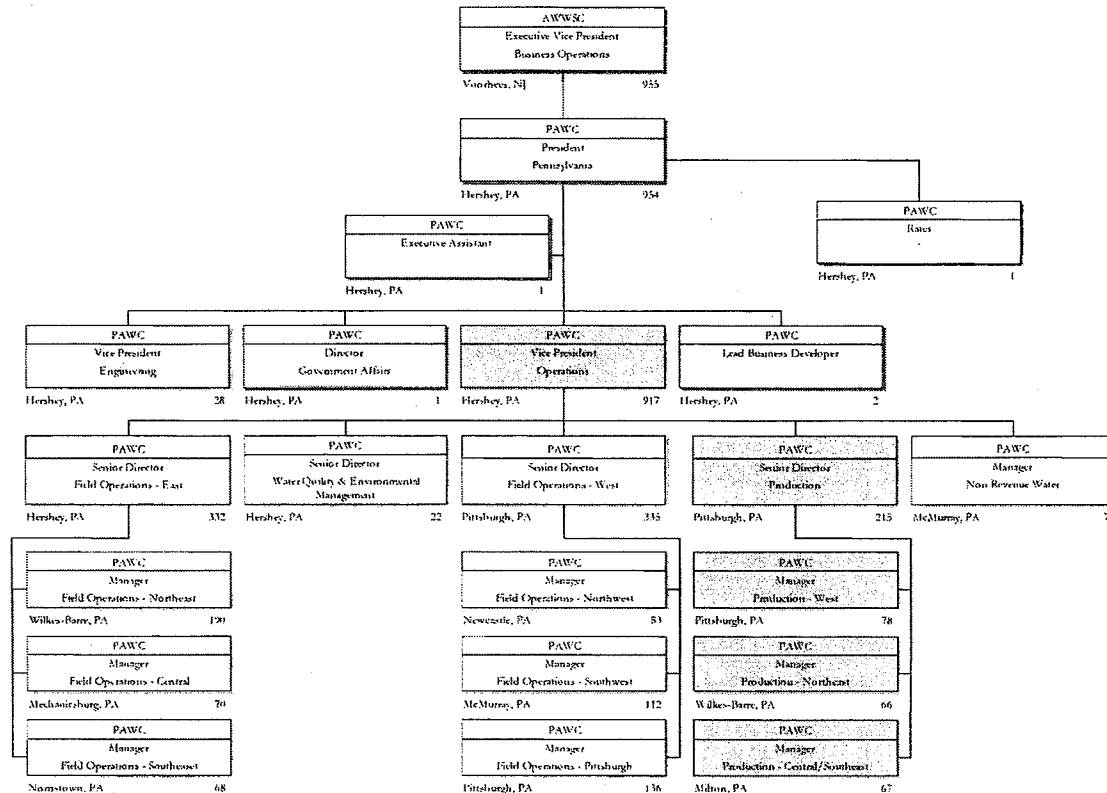
A. Production

Background & Perspective

The Production Department is responsible for the operations and maintenance of 36 water treatment plants and 85 groundwater well stations in 35 different water districts throughout Pennsylvania. The department also operates and maintains four wastewater treatment plants. The Production Department is organized as shown in *Exhibit V-4* with the highlighted boxes.



Exhibit V-4
PAWC Production Department Organization
as of December 31, 2007



Source: Information Response 257 Addendum

* Dual Reporting to Finance and dotted line reporting to the PAWC President

As shown in *Exhibit V-4*, the Production Department is organized on a geographic basis in a West, Northeast, and Central/Southeast scheme. In addition to the Production Department, the Water Quality and Environmental Department also has personnel stationed at some of the plants. Although individual water quality is nominally assigned to a plant, from a water quality and environmental perspective, the department is typically responsible for overseeing the operations of several water plants within its geographic area.



Findings & Conclusions

Finding V-1 PAWC production facilities are well operated.

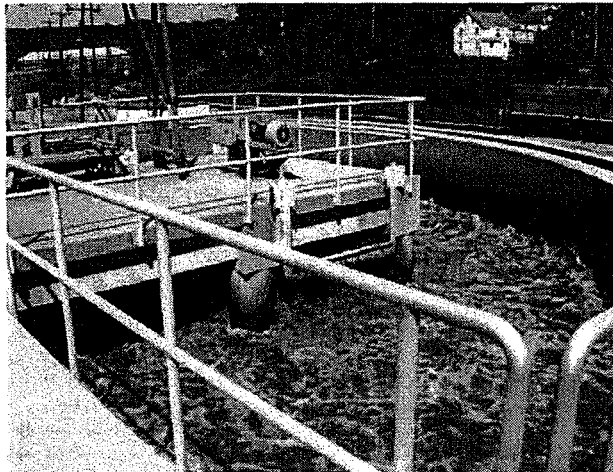
Schumaker & Company consultants physically reviewed the operations of several production plants within Pennsylvania, including those shown in *Exhibit V-5*.

Exhibit V-5 Production Facility Tours as of December 31, 2007				
	Plant Nominal Capacity	Water Source	Estimated Population Served	Plant Design
Pittsburgh Area			500,000	
E. H. Aldrich	50 MGD	Monongahela River		Aldrich Purifications Units – Flocculation, Sedimentation, Clarification, Filters
Hays Mine	60 MGD	Monongahela River		Super Pulsator Design – Flocculation, Sedimentation, Clarification, Filters
Hershey	9 MGD	Manada and Swatara Creeks/City of Lebanon	41,754	Super Pulsator Design – Flocculation, Sedimentation, Clarification, Filters
West Shore			88,000	
West Shore Regional	12 MGD	Yellow Breeches Creek		Super Pulsator Design – Flocculation, Sedimentation, Clarification, Filters
Silver Springs Plant	8 MGD	Conodoquinet Creek		Aldrich Purifications Units – Flocculation, Sedimentation, Clarification, Filters
Coatesville				
Rock Run Water Treatment	5 MGD	West Branch of Brandywine Creek and Chambers Lake	35,800	Mixing Units – Clarification and Granular Media Filtration
Wilkes-Barre				
Scranton	33 MGD	Lake Scranton Reservoir	140,000	Mixing Units – Clarification and Granular Media Filtration
Crystal Lake	6.5 MGD	Crystal Lake	14,000	Mixing Units – Clarification and Granular Media Filtration
Philadelphia Area				
Royersford	3.7 MGD	Schuylkill River	43,500	Mixing Units – Clarification and Granular Media Filtration
Norristown	18 MGD	Schuylkill River	101,000	Super Pulsator Design – Flocculation, Sedimentation, Clarification, Filters
Yardley	5.4 MGD	Delaware River	49,000	Mixing Units – Clarification and Granular Media Filtration

Source: Information Response 126

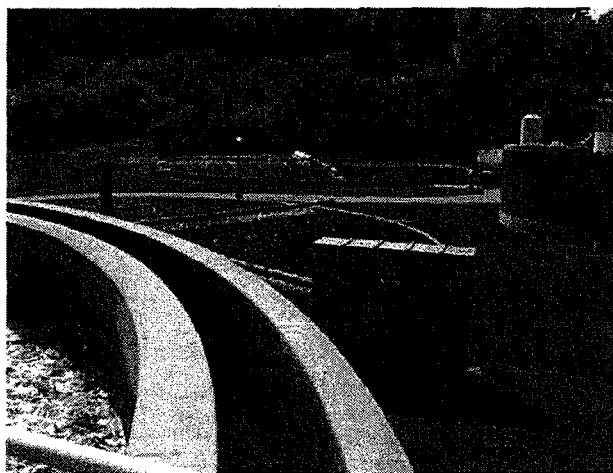
One of the facilities visited was the Coatesville Wastewater treatment plant. *Exhibit V-6* and *Exhibit V-7* are two different pictures taken at those facilities.

Exhibit V-6
Coatesville Wastewater Treatment Facility
as of December 31, 2007



Source: Schumaker & Company Consultant Plant Tours

Exhibit V-7
Coatesville Wastewater Treatment Facility
as of December 31, 2007

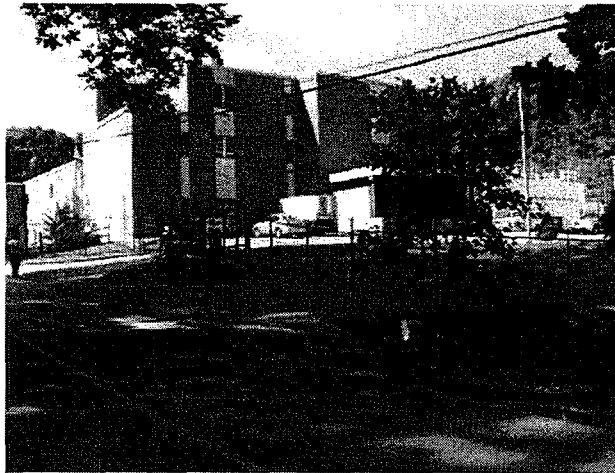


Source: Schumaker & Company Consultant Plant Tours

8/7/2008

The Coatesville Water Treatment Plant is shown in *Exhibit V-8*. It is located across the street from one of the reservoirs that provided intake water to the facility. A picture of the retaining dam across the street from the Coatesville Water Treatment Plant is shown in *Exhibit V-9*.

Exhibit V-8
Coatesville Water Treatment Plant
as of December 31, 2007



Source: Schumaker & Company Consultant Plant Tours

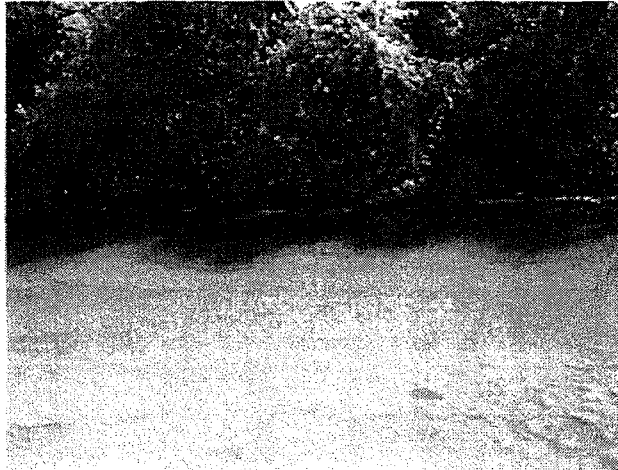
Exhibit V-9
Coatesville Retaining Dam on Reservoir
as of December 31, 2007



Source: Schumaker & Company Consultant Plant Tours

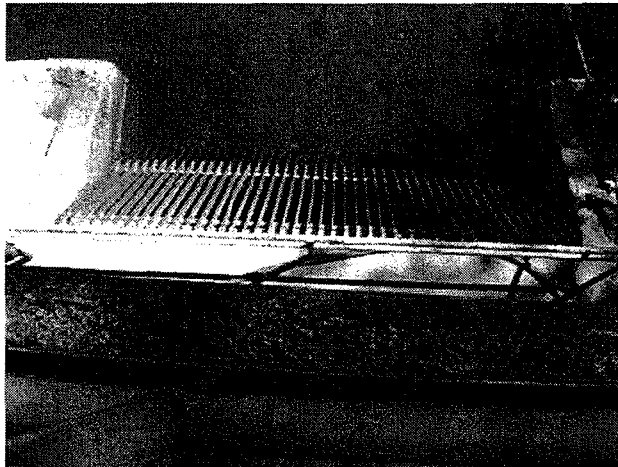
Exhibit V-10 illustrates the water source, Conodoquinet Creek, showing a small amount of green algae, for the Silver Springs Plant. *Exhibit V-11* and *Exhibit V-12* show the intake facility for the Silver Springs Plant.

Exhibit V-10
Silver Springs Water Source Conodoquinet Creek
as of December 31, 2007



Source: Schumaker & Company Consultant Plant Tours

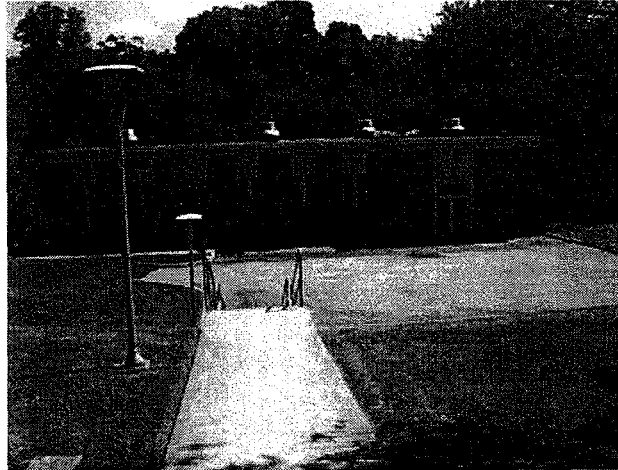
Exhibit V-11
Silver Springs Water Intake Showing Exterior Screen
as of December 31, 2007



Source: Schumaker & Company Consultant Plant Tours



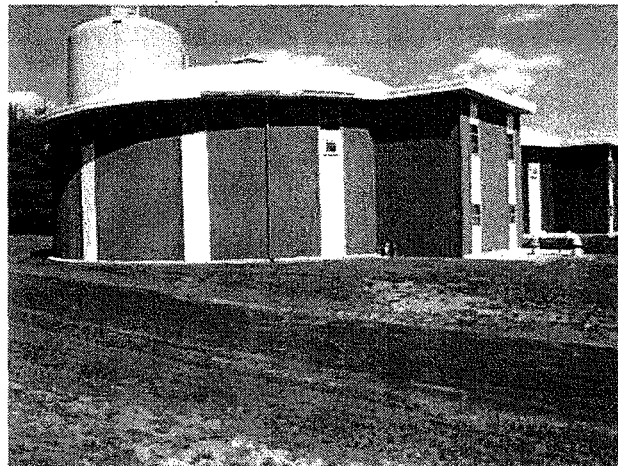
Exhibit V-12
Silver Springs Water Intake and Pump Station
as of December 31, 2007



Source: Schumaker & Company Consultant Plant Tours

Exhibit V-13 is a picture of the water treatment buildings at the Silver Springs Plant in Mechanicsburg.

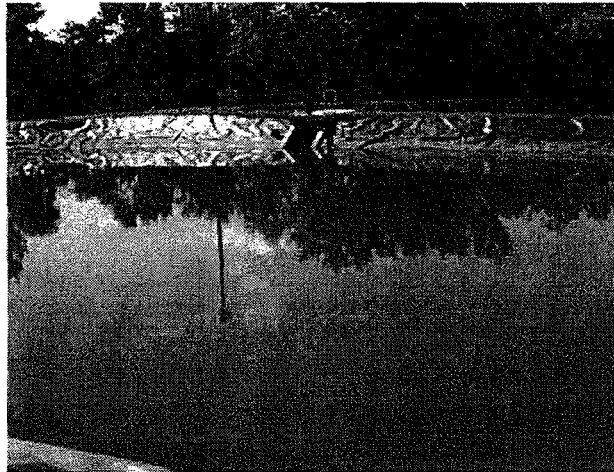
Exhibit V-13
Silver Springs Aldrich Purification Units
as of December 31, 2007



Source: Schumaker & Company Consultant Plant Tours

Exhibit V-14 is a picture of the Silver Springs lagoons that have recently been completed. These lagoons have been reworked in the last several years to replace older facilities.

Exhibit V-14
Silver Springs Lagoons
as of December 31, 2007



Source: Schumaker & Company Consultant Plant Tours

Exhibit V-15 is a picture of the West Shore Plant in Mechanicsburg that Schumaker & Company consultants toured during our review.

Exhibit V-15
West Shore Plant
as of December 31, 2007



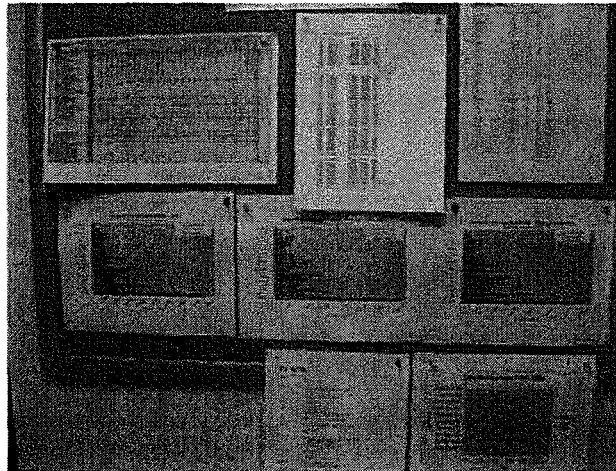
Source: Schumaker & Company Consultant Plant Tours



This plant is one of PAWC's newer water production facilities. All of the equipment is contained within one large, totally enclosed building as contrasted with some of the older facilities that have different buildings located around the site.

Schumaker & Company consultants also reviewed many of the monthly reports that are used in the monitoring of water production operations. At many of the various facilities that were toured, Schumaker & Company consultants observed various performance charts being displayed as shown in *Exhibit V-16*.

Exhibit V-16
Performance Charts on Coatesville Water District Office
as of December 31, 2007



Source: Schumaker & Company Consultant Plant Tours

PAWC has been an active participant in the Partnership for Safe Water program at all of its plants. As a result of this participation, PAWC has been recognized for changes (improvements) that have been achieved at its various water production facilities, an example of which is shown in *Exhibit V-17*. During our tour of many of the water production facilities, we were impressed with the willingness of PAWC plant personnel to test changes in plant operations or test new technologies in an effort to improve the delivered water quality or to lower operating costs.

Exhibit V-17
Partnership Annual Report for Pennsylvania-American Water Company – Butler 2006–2007
as of December 31, 2007

The Pennsylvania-American Water Company – Butler Water Treatment Plant successfully completed the Phase III self-assessment portion of the Partnership for Safe Water program. In March of 2000, this facility was awarded the Environmental Protection Agency's (EPA) "Director's Certificate of Recognition" for this effort. In 2005, the Butler Water Treatment Plant received the five-year recognition award. In order to maintain the Phase III status, this annual report noting improvements or changes that brought about a more consistent plant performance, is submitted. Listed below are issues that have contributed to the continuing ability to meet this performance level:

The combined filter effluent 99% turbidity from June 2006 to May 2007 was 0.05 NTU, with a high reading of 0.07 NTU.

The settled 95% turbidity from June 2006 to May 2007 was 0.79 NTU. The settled 99% turbidity from June 2006 to May 2007 was 0.93 NTU. The goal of optimal settling continues to be visually monitored on a constant basis by plant operators. Flocculator speeds are adjusted in relationship to pumpage rates whenever visual observations and settled turbidity measurements indicate solids carryover. In addition, these observations are used along with jar tests, zeta meter readings, and SCD readings to optimize coagulant dosage.

The raw water 99% turbidity from June 2006 to May 2007 was 19 NTU.

Action level charts have been updated to reinforce any operation changes that have been implemented.

Annual review and training sessions have been held for all operating personnel concerning regulations, operational and treatment goals, action level charts, log charts, and other pertinent details.

The high percentage rate of water recycle through the plant was a concern for the PEAC committee. After the submittal of the Phase III report, the recycle rates were reduced from 2800 gpm to 1400 gpm.

The use of a PACL during cold weather months has significantly increased the efficiency of the coagulation processes. If found to be necessary in the future, other substitute coagulants, coagulant aids, or filter aids will be evaluated.

A bench model CCA 3100 Chemtrac Coagulant Charge Analyzer was purchased in November of 2006 to help optimize treatment, and the unit is used at least once a shift in conjunction with the online SCD to help optimize treatment.

Definitions:

PEAC -- Program Effectiveness Assessment Committee -- Committee of mostly peer water utilities members, but some regulatory members, also. The committee reviews and approves the Partnership for Safe Water Phase III self-assessment.

PACL -- Polyaluminum chloride coagulant -- An alternative to alum in the water treatment process that is useful in cold water treatment.

SCD -- Streaming current detector -- An online instrument used to measure and control the coagulant feed rate.

Source: Information Response 131

Several types of regular reports are made to supervisors and management on the performance of PAWC's water and wastewater systems, including the following examples:

- ◆ Water quality reports issued monthly by Water Quality technical staff
- ◆ Periodic inspections of water storage tank structures
- ◆ Weekly and monthly system-delivery pumpage reports
- ◆ Monthly energy management reports for American Water regions



- ◆ Monthly fuel and power consumption for all Pennsylvania utility accounts
- ◆ Regular reports of condition-based maintenance tests performed on critical process equipment

Finding V-2 PAWC uses state-of-the-art, computerized supervisor control and data acquisition (SCADA) systems to continuously monitor critical pumping and treatment processes, as well as distribution system hydraulic conditions, at most of its treatment plants and associated remote facilities.

Schumaker & Company consultants observed PAWC's SCADA system at several of the plants visited. The various operations' SCADA capabilities are available for review in PAWC's offices and plants. The SCADA system monitors and reports various conditions regarding water plant operations and network conditions, including flows, pressures, tank levels, etc. Within a given geographic area, SCADA information is available at the water plants, and review of remote operations, operating valves, pumps, etc. can be performed.

There are different levels of SCADA system automation throughout PAWC's operations. In certain smaller plants, a given shift (usually the overnight shift) might not be staffed and either the plant is not operated at all, but is capable of being monitored from another manned plant or the plant operates unmanned, with operating control being performed from another plant via the SCADA system. The ongoing development and support for the SCADA system is provided by in-house staff. PAWC employs plant operators to manually monitor the SCADA systems, alarms, and other plant processes on a 24/7 basis.

PAWC has adopted a common platform for its SCADA system and is in the process of integrating the various plants and networks onto this common platform. Certain aspects of the SCADA system are available via the Internet to personnel with the correct security credentials – although this features only allows appropriate management access to view SCADA information but does not allow them to control plant operations. Therefore, if an event occurs that requires attention (all plants use dialing equipment that progressively call out based on a dialing chain), management and supervisory personnel are able to monitor the plant and/or network from remote (home) locations.

Recommendations

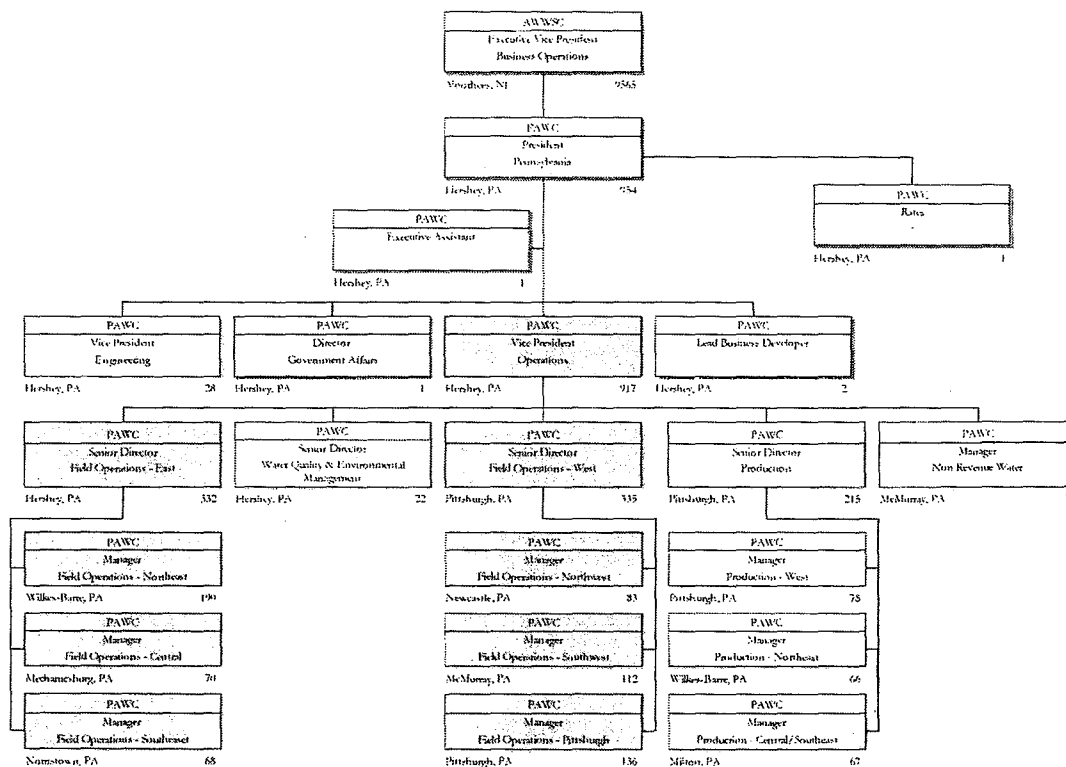
None

B. Network Operations and Maintenance

Background & Perspective

The Network Department is responsible for main installation and maintenance, service line installation and maintenance, leak investigations and repair, and other operations and maintenance activities associated with the underground water delivery systems. Network Operations and Maintenance, or what is now referred to as Field Operations, is organized on a geographic basis. There is an Eastern and Western organization, as shown in *Exhibit V-18*. In addition to the Field Operations personnel and similar to the Water Production Department, the Non Revenue Water Department provides an oversight role in the operation of the water delivery systems. The ongoing reporting and monitoring of non-revenue water is an indicator of the condition of the water delivery system.

Exhibit V-18
PAWC Network Department Organization
as of December 31, 2007



Source: Information Response 257 Addendum

* Dual reporting to Finance and dotted line report to the PAWC President

8/7/2008

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Findings & Conclusions

Finding V-3 **Best practices are not necessarily shared or implemented by the various water districts.**

On one hand, each of the Water Production and Network organizations operate fairly autonomously. Although this tendency might be good in some instances, the shift composition and staffing composition for example varies from plant to plant based on the characteristics (size and technologies) of each plant. However, some basic business processes that should be standardized throughout the organization have not been standardized, which should be a benefit of PAWC being a part of a larger organization.

On the network side, the business practices employed in each district vary in their design and implementation. Some basic business processes, such as leak tracking, valve operations, hydrant flushing, pavement cut tracking, permit tracking, etc., should be standardized throughout the organization. Schumaker & Company consultants recognize that some of these business processes are currently anticipated to be incorporated into the new computerized maintenance management system.

This area is discussed in greater detail in the *Chapter XII – Phase III Water Operations*.

Finding V-4 **Although PAWC has built a good SCADA system for operating the plants and distribution network, its implementation of technology for managing the day-to-day monitoring and reporting on various aspects of the business processes within network needs significant improvement.**

Although PAWC has implemented an enterprise resource planning (ERP) system that deals with most of its financial requirements, many of the operational business processes are either at a state of:

- ♦ *No computerization* – relies on manual paper systems that are too difficult or labor intensive to provide timely management reporting.
- ♦ *Minimal computerization* – requires manual entry of information into Excel spreadsheets and a fair amount of manual manipulation of the information in those spreadsheets.
- ♦ *Various different business processes and the corresponding different manual or computer systems* – Different water districts have different manual/computer systems for accomplishing a similar business process.

Some of these business processes involve maintenance management, leak tracking and reporting, non-revenue water tracking and reporting (although an extensive set of linked spreadsheets has been developed over the last two years (2006 -2007) to support these business processes), valve operation and testing, hydrants flushing, pavements cuts, permits, etc.

This area is discussed in greater detail in the *Chapter XII – Phase III Water Operations*.

Finding V-5 The number of reported leaks/breaks by water district indicates that certain water districts are up to 10 times worse than others.

Exhibit V-19 shows the leaks/breaks experienced in each water district in Pennsylvania over the last five years. As shown in *Exhibit V-19*, the highest number of leaks occur in the Pittsburgh, Wilkes-Barre/Scranton, and McMurray water districts. These districts also happen to be the areas with the highest number of miles of main.

Exhibit V-19
PAWC Leaks/Breaks by Water District by Year
2002 to 2006

Water District	Miles of Main	Leaks/Breaks By Year				
		2002	2003	2004	2005	2006
Pittsburgh	1373	N/A	1127	1269	1519	1447
Wilkes-Barre/Scranton	1925	460	460	525	448	404
McMurray	1099	373	310	304	324	373
Mon/Valley	427	295	334	281	255	308
New Castle/Ellwood	443	185	183	129	173	142
Uniontown	224	125	159	132	128	175
Butler	270	150	87	78	73	102
Norristown	376	79	96	68	119	104
Mechanicsburg	478	98	74	74	74	125
Brownsville	101	59	59	52	39	53
Indiana	111	47	49	58	62	40
Philipsburg	262	42	50	44	43	38
Abington	105	46	46	36	47	32
Hershey/Palmyra	299	31	38	26	49	25
Punxy	85	23	31	42	37	24
Milton	227	21	18	21	34	14
Pocono	161	14	9	6	26	50
Warren	91	15	22	22	15	14
Nazareth (Blue Mountain)	151	24	10	20	17	17
Clarion	124	6	17	17	21	20
Susquehanna	61	5	20	16	11	23
Coatesville	174	N/A	16	22	10	27
Lehman Pike (Hickory/Silver)	90	23	19	12	1	N/A
Kittanning	25	N/A	N/A	N/A	N/A	13
Berwick	84	8	10	13	23	8
Bangor	61	6	24	12	10	4
Penn-Wyomissing (ST)	153	9	10	3	22	10
Glen Alsace (A-E)	130	6	6	8	11	10
Yardley	183	9	10	3	11	5
Royersford (Home)	222	7	6	7	7	7
Lake Heritage	12	3	6	8	3	5
Frackville	27	4	3	8	0	0
Kane	47	0	6	1	2	3

Source: Information Request 134



Using the information from *Exhibit V-19*, Schumaker & Company consultants developed a leak/break frequency analysis that essentially normalizes the information based on the miles of main within each water district. This information, shown in *Exhibit V-20*, is sorted from highest to lowest. Again, the western Pennsylvania water districts experience the highest frequency of leaks/breaks.

Exhibit V-20
PAWC Average Leaks/Breaks Frequency by Water District by Year
2002 to 2006

Water District	Miles of Main	Leaks/Breaks Per Mile 2003-20067	Comments
Pittsburgh	1373	0.976	
Mon/Valley	427	0.690	
Uniontown	224	0.642	
Kittanning	25	0.520	One Year Only
Brownsville	101	0.519	
Indiana	111	0.461	
Lake Heritage	12	0.417	
Abington	105	0.394	
Punxy	85	0.369	
New Castle/Ellwood	443	0.367	
Butler	270	0.363	
McMurray	1099	0.306	
Norristown	376	0.248	
Susquehanna	61	0.246	
Wilkes-Barre/Scranton	1925	0.239	
Warren	91	0.193	
Mechanicsburg	478	0.186	
Bangor	61	0.184	
Philipsburg	262	0.166	
Lehman Pike (Hickory/Silver)	90	0.153	Three Years Only
Berwick	84	0.148	
Clarion	124	0.131	
Pocono	161	0.130	
Nazareth (Blue Mountain)	151	0.117	
Hershey/Palmyra	299	0.113	
Frackville	27	0.111	
Milton	227	0.095	
Coatesville	174	0.086	
Penn-Wyomissing (ST)	153	0.071	
Glen Alsace (A-E)	130	0.063	
Kane	47	0.051	
Yardley	183	0.042	
Royersford (Home)	222	0.031	

Source: Schumaker Analysis of Information Request 134

The information in *Exhibit V-20* can be used to develop an expectation of the distribution of the capital and maintenance dollars to the various water districts would have been historically based on the leak/break history and the miles of installed main. This analysis is shown in *Exhibit V-21*.

Exhibit V-21
PAWC Capital/Maintenance Expectations Based on Leak/Break History
as of December 31, 2007

Water District	Miles of Main	Percentage of Total Mile of Main	Break Frequency Normalized	Expected Budget Percentage
Pittsburgh	1373	14.30%	11.06%	38.42%
Wilkes-Barre/Scranton	1925	20.05%	2.70%	13.17%
McMurray	1099	11.45%	3.47%	9.65%
Mon/Valley	427	4.45%	7.82%	8.44%
New Castle/Ellwood	443	4.61%	4.15%	4.65%
Uniontown	224	2.33%	7.27%	4.12%
Butler	270	2.81%	4.11%	2.81%
Norristown	376	3.92%	2.81%	2.67%
Mechanicsburg	478	4.98%	2.11%	2.55%
Brownsville	101	1.05%	5.88%	1.50%
Indiana	111	1.16%	5.23%	1.47%
Philipsburg	262	2.73%	1.88%	1.24%
Abington	105	1.09%	4.47%	1.19%
Hershey/Palmyra	299	3.11%	1.28%	0.97%
Punxy	85	0.89%	4.19%	0.90%
Milton	227	2.36%	1.08%	0.62%
Pocono	161	1.68%	1.48%	0.60%
Warren	91	0.95%	2.19%	0.50%
Nazareth (Blue Mountain)	151	1.57%	1.32%	0.50%
Clarion	124	1.29%	1.48%	0.46%
Susquehanna	61	0.64%	2.79%	0.43%
Coatesville	174	1.81%	0.98%	0.43%
Lehman Pike (Hickory/Silver)	90	0.94%	1.73%	0.39%
Kittranning	25	0.26%	5.89%	0.37%
Berwick	84	0.87%	1.67%	0.36%
Bangor	61	0.64%	2.08%	0.32%
Penn-Wyomissing (SI)	153	1.59%	0.80%	0.31%
Glen Alsace (A-E)	130	1.35%	0.71%	0.23%
Yardley	183	1.91%	0.47%	0.22%
Royersford (Home)	222	2.31%	0.35%	0.19%
Lake Heritage	12	0.12%	4.72%	0.14%
Frackville	27	0.28%	1.26%	0.09%
Kane	47	0.49%	0.58%	0.07%
	9601	100.00%	100.00%	100.00%

Source: Schumaker Analysis of Information Request 134

Expected Budget Performance - represents the expected percentage of the total capital and maintenance expenditures that would have been spent for main repair/replacement based on leak history



Finding V-6 Maintenance and capital budgets do not appear to consistently take an analysis of leak/break historical data into consideration shown in *Exhibit V-24*

Schumaker & Company consultants obtained both the capital and maintenance dollars spent in each water district for the last four to five years based on the availability of data. Total capital expenditures for primarily main replacement activities are shown in *Exhibit V-22*.

Exhibit V-22
PAWC Actual Capital Expenditures – Main Replacements
2004 to 2007

District Unit	District Name	2004	2005	2006	2007	Total Four Years	Percentage of Capital Expenditures
2411	Pittsburgh District	\$12,611,831	\$13,261,113	\$17,320,926	\$13,020,817	\$56,214,688	32.90%
2491	Wilkes-Barre/Scranton	\$6,414,997	\$6,338,775	\$10,932,675	\$9,849,399	\$33,535,846	19.63%
2421	McMurray District	\$1,754,515	\$2,364,361	\$3,189,618	\$3,646,162	\$10,954,657	6.41%
2422	Mon Valley District	\$1,637,250	\$1,704,237	\$3,445,402	\$2,167,637	\$8,954,525	5.24%
2463	Wyomissing	\$744,412	\$2,268,265	\$2,446,270	\$148,458	\$5,607,405	3.28%
2431	New Castle/Ellwood District	\$693,775	\$997,059	\$1,297,945	\$1,255,296	\$4,244,075	2.48%
2451	Norristown District	\$1,108,324	\$923,681	\$1,194,943	\$972,637	\$4,199,585	2.46%
2423	Uniontown / Connellsville District	\$436,702	\$599,804	\$2,024,172	\$1,070,682	\$4,131,361	2.42%
2461	Mechanicsburg District	\$571,770	\$778,686	\$1,168,852	\$1,028,287	\$3,547,595	2.08%
2459	Glen Alsace	\$0	\$0	\$2,028,987	\$1,124,579	\$3,153,566	1.85%
2452	Yardley District	\$432,468	\$405,040	\$716,396	\$1,493,142	\$3,047,045	1.78%
2462	Hershey/Palmira District	\$687,748	\$177,915	\$693,278	\$921,041	\$2,479,982	1.45%
2467	Coatsville WW District	\$92,302	\$6,927	\$231,562	\$2,108,754	\$2,439,545	1.43%
2465	Coatsville District	\$225,798	\$59,853	\$872,562	\$1,222,898	\$2,381,111	1.39%
2472	Philipsburg District	\$599,562	\$198,109	\$653,483	\$827,999	\$2,279,153	1.33%
2425	Brownsville District	\$108,767	\$306,497	\$1,093,938	\$699,359	\$2,208,561	1.29%
2471	Milton District	\$425,112	\$421,243	\$789,375	\$545,806	\$2,181,536	1.28%
2433	Butler District	\$360,742	\$722,047	\$456,612	\$591,574	\$2,130,974	1.25%
2464	Royersford	\$623,345	\$158,189	\$897,062	\$278,347	\$1,956,944	1.15%
2456	Nazareth District	\$425,389	\$861,310	\$508,089	\$137,098	\$1,931,887	1.13%
2454	Susquehanna District	\$408,474	\$476,312	\$387,617	\$327,159	\$1,599,562	0.94%
2468	Lehman pike	\$226,693	\$255,809	\$711,713	\$393,072	\$1,587,288	0.93%
2457	Pocono District	\$141,392	\$188,160	\$480,490	\$677,820	\$1,487,862	0.87%
2441	Indiana District	\$172,271	\$163,971	\$727,186	\$293,070	\$1,356,498	0.79%
2473	Berwick District	\$165,437	\$11,594	\$235,974	\$888,887	\$1,301,893	0.76%
2446	Kane District	\$98,304	\$100,853	\$624,999	\$360,158	\$1,184,314	0.69%
2453	Abington District	\$236,529	\$383,591	\$334,742	\$208,907	\$1,163,769	0.68%
2445	Warren District	\$166,320	\$244,182	\$544,227	\$85,549	\$1,040,277	0.61%
2455	Bangor District	\$317,449	\$122,618	\$303,129	\$40,648	\$783,843	0.46%
2474	Frackville District	\$188,833	\$64,907	\$321,324	\$170,454	\$745,519	0.44%
2442	Punxsutawney District	\$143,415	\$96,179	\$137,869	\$168,600	\$546,063	0.32%
2443	Clarion District	\$15,337	\$153,726	\$77,556	\$128,722	\$375,342	0.22%
2444	Kittanning District	\$2,747	\$48,665	\$2,830	\$35,948	\$90,190	0.05%
2469	Lehman pike WW	\$1,022	\$7,345	\$0	\$0	\$8,367	0.00%
2458	Pocono WW District	\$5,981	\$0	\$0	\$0	\$5,981	0.00%
2466	Lake Heritage	\$0	\$0	\$2,977	\$57	\$3,034	0.00%
2481	Corporate Office	\$0	\$0	\$0	\$0	\$0	0.00%
	Totals	\$32,245,013	\$34,871,025	\$56,854,780	\$46,889,022	\$170,859,840	100.00%

Source: Information Response 721

In a similar manner, the maintenance expenditures for each water district for the last five years are shown in *Exhibit V-23*.

Exhibit V-23
PAWC Maintenance Expenditures by Water District
2003 to 2007

Water District	2003	2004	2005	2006	2007	Total Five Years	Percentage of Total Maintenance Expenditures
Pittsburgh	\$4,394,129	\$3,936,568	\$4,265,013	\$4,573,774	\$5,052,767	\$22,222,250	27.68%
Scranton/Wilkes-Barre	\$4,255,288	\$4,088,102	\$4,117,968	\$4,585,152	\$5,166,809	\$22,213,319	27.67%
McMurray	\$1,098,945	\$1,030,412	\$987,537	\$871,979	\$1,224,686	\$5,213,559	6.49%
Mon-Valley	\$895,108	\$799,126	\$832,113	\$749,105	\$680,599	\$3,956,051	4.93%
New Castle / Ellwood	\$601,778	\$502,298	\$606,778	\$440,213	\$669,190	\$2,820,257	3.51%
Coatesville Water	\$487,995	\$544,479	\$468,821	\$521,334	\$552,433	\$2,575,062	3.21%
Butler	\$463,335	\$437,216	\$504,993	\$476,903	\$491,242	\$2,373,689	2.96%
Mechanicsburg	\$416,606	\$340,613	\$369,132	\$611,094	\$596,872	\$2,334,317	2.91%
Norristown	\$222,198	\$197,721	\$311,238	\$326,028	\$648,427	\$1,705,612	2.12%
Uniontown/Connellsville	\$436,976	\$307,858	\$367,793	\$196,235	\$363,482	\$1,672,344	2.08%
Hershey	\$256,245	\$168,945	\$307,386	\$343,051	\$273,465	\$1,349,092	1.68%
Wyomissing - Penn	\$229,605	\$297,017	\$307,286	\$150,051	\$193,939	\$1,177,899	1.47%
Abington	\$199,115	\$207,172	\$212,370	\$231,695	\$241,833	\$1,092,186	1.36%
Warren	\$157,461	\$146,405	\$201,145	\$163,014	\$185,509	\$853,534	1.06%
Bangor	\$184,789	\$172,721	\$92,392	\$123,410	\$167,191	\$740,503	0.92%
Milton	\$120,701	\$130,121	\$164,840	\$131,884	\$177,487	\$725,033	0.90%
Philipsburg	\$130,357	\$128,788	\$145,795	\$119,722	\$166,943	\$691,606	0.86%
Lehman Pike Water	\$133,925	\$100,335	\$128,642	\$137,374	\$170,885	\$671,162	0.84%
Nazareth	\$134,042	\$125,791	\$122,762	\$126,031	\$138,425	\$647,052	0.81%
Poconos	\$113,747	\$104,372	\$116,236	\$115,398	\$138,443	\$588,195	0.73%
Brownsville	\$141,827	\$99,582	\$100,434	\$97,597	\$128,981	\$568,422	0.71%
Indiana	\$116,925	\$134,184	\$110,355	\$83,546	\$118,451	\$563,461	0.70%
Royersford	\$87,131	\$123,701	\$141,812	\$120,076	\$67,611	\$540,330	0.67%
Kane	\$94,580	\$93,811	\$115,898	\$94,390	\$123,190	\$521,869	0.65%
Punxsutawney	\$83,058	\$75,384	\$74,857	\$85,050	\$104,187	\$422,536	0.53%
Kittanning	\$78,424	\$82,446	\$56,191	\$85,759	\$89,173	\$391,993	0.49%
Clarion	\$49,577	\$51,959	\$95,301	\$82,411	\$83,253	\$362,501	0.45%
Susquehanna	\$77,486	\$38,398	\$53,792	\$66,252	\$41,208	\$277,136	0.35%
Yardley	\$76,539	\$37,400	\$66,736	\$51,709	\$43,704	\$276,088	0.34%
Berwick	\$59,920	\$57,511	\$47,618	\$26,493	\$37,930	\$229,471	0.29%
Wyomissing - Glen	\$0	\$0	\$171	\$101,464	\$101,273	\$202,908	0.25%
Lehman Pike Wastewater	\$15,980	\$30,297	\$35,418	\$19,182	\$19,767	\$120,643	0.15%
Frackville	\$23,407	\$33,238	\$22,074	\$8,471	\$19,187	\$106,377	0.13%
Lake Heritage	\$15,783	\$7,411	\$13,862	\$23,430	\$17,281	\$77,767	0.10%
Coatesville Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	0.00%
Total	\$15,852,983	\$14,631,381	\$15,564,762	\$15,939,276	\$18,295,823	\$80,284,225	100.00%

Source: Information Response 722

Compiling the last column from *Exhibit V-21*, *Exhibit V-22*, and *Exhibit V-23* into *Exhibit V-24* provides some insight into how the dollars are being spent on network facilities.



Exhibit V-24
PAWC Distribution of Capital and Maintenance Expenditures by District
2003 - 2007

Water District	Miles of Main	Expected Budget Percentage	Maintenance	Capital
Pittsburgh	1373	38.42%	27.68%	32.90%
Wilkes-Barre/Scranton	1925	13.17%	27.67%	19.63%
McMurray	1099	9.65%	6.49%	6.41%
Mon/Valley	427	8.44%	4.93%	5.24%
New Castle/Ellwood	443	4.65%	3.51%	2.48%
Uniontown	224	4.12%	2.08%	2.42%
Butler	270	2.81%	2.96%	1.25%
Norristown	376	2.67%	2.12%	2.46%
Mechanicsburg	478	2.55%	2.91%	2.08%
Brownsville	101	1.50%	0.71%	1.29%
Indiana	111	1.47%	0.70%	0.79%
Philipsburg	262	1.24%	0.86%	1.33%
Abington	105	1.19%	1.36%	0.68%
Hershey/Palmyra	299	0.97%	1.68%	1.45%
Punxy	85	0.90%	0.53%	0.32%
Milton	227	0.62%	0.90%	1.28%
Pocono	161	0.60%	0.73%	0.87%
Nazareth (Blue Mountain)	151	0.50%	0.81%	1.13%
Warren	91	0.50%	1.06%	0.61%
Clarion	124	0.46%	0.45%	0.22%
Coatesville	174	0.43%	3.21%	2.82%
Susquehanna	61	0.43%	0.35%	0.94%
Lehman Pike (Hickory/Silver)	90	0.39%	0.84%	0.93%
Kittanning	25	0.37%	0.49%	0.05%
Berwick	84	0.36%	0.29%	0.76%
Bangor	61	0.32%	0.92%	0.46%
Penn-Wyomissing (ST)	153	0.31%	1.47%	3.28%
Glen Alsace (A-E)	130	0.23%	0.25%	1.85%
Yardley	183	0.22%	0.34%	1.78%
Roversford (Home)	222	0.19%	0.67%	1.15%
Lake Heritage	12	0.14%	0.10%	0.00%
Frackville	27	0.09%	0.13%	0.44%
Kane	47	0.07%	0.65%	0.69%

Source: Information Responses 134, 721, and 722

What are revealed in *Exhibit V-24* are such tendencies as:

- ◆ Although the leak/break history and miles of installed pipe would tend to expect that Pittsburgh would be expending 38.42% of capital and maintenance dollars, Pittsburgh is expending only 27.68% of maintenance and 32.90% of capital. This discrepancy could indicate that insufficient dollars are being spent in the Pittsburgh District based on their leak/break history.
- ◆ With respect to the Wilkes-Barre/Scranton water district, one would expect that 13.17% of the dollars expended would flow to that water district; however, Wilkes-Barre/Scranton is receiving 27.67% of maintenance and 19.63% of capital.
- ◆ With respect to Coatesville, while one would expect that 0.43% of the total dollars would be directed toward that district, it is receiving 3.21% of maintenance and 2.82% of capital.

Schumaker & Company consultants recognize that there are many factors to be considered in distributing the capital and maintenance dollars among the various water districts. However, on a retrospective basis, leak history provides an overall indication of the condition of the distribution facilities. One would expect that the areas experiencing the most leaks would, simply put, be getting the most \$ resources committed to address leaks. This analysis did not necessarily show that to be the case.

Recommendations

Recommendation V-1 Aggressively pursue the identification and implementation of technology-based best practices among the water districts. (Refer to Finding V-4 and Finding V-3.)

Although American Water contains a Best Operating Practices (BOP) organization, it appears that little has been done to standardize some of these practices for the benefit of PAWC customers. BOP is a relatively new discipline within the organization. BOP's mission is to identify best operating practices and translate them into American Water policies, strategies and practices to be followed by all appropriate personnel within the American Water System.

To ensure "buy-in," individuals from all regions/states serve as representative participants in developing the proposed policy, strategy or practice. When developed, drafts of proposed policies, strategies and practices are then distributed to a broader audience across the business for comment and additional buy-in prior to the BOP team seeking Service Company Board approval that results in a formal policy, or functional approval that results in a formal strategy or practice (continued).

To BOP's defense, it appears that best operating practices are being developed, but it is up to each water district to decide what practices to adopt or implement. This approach is contrary to Schumaker & Company's experience with other larger companies that strive to identify the best way to do things and then require the implementation of those best practices throughout the organization.



According to PAWC management, all American Water policies, strategies and practices are required to be adopted. Policies dictate an effective date for adoption. What is "up to each water district to decide" is when and how to begin to implement a particular strategy or practice, which could require additional human, capital or other resources, a rate proceeding or other occurrence to permit implementation of the strategy or practice.

However, several of the practices that Schumaker & Company consultants had reviewed would in reality need some type of business process built into a computer system to effectively implement. Either the BOP Group needs to be able to translate these higher level policies into specific computer based business processes or Information Technologies Services needs to be charged with building or procuring computer-based business processes to effectively implement American Water policies, strategies and practices throughout American Water.

Recommendation V-2 **Develop a business process for addressing aggressive identification of the most beneficial main segments for replacement based on an expectation of potential leak impact. (Refer to Finding V-4, Finding V-5, and Finding V-6.)**

The Schumaker & Company analysis raises an issue with how the capital and O&M expenditures have been distributed among the various water districts based on the leak histories of each water district. We recognize that this is but one way, although a strong indicator, of the need for capital and O&M funding in each water district. A more complete methodology needs to be developed that not only considers leak history and other factors such as age of pipe, pipe material, size etc. but also can be applied on a pipe segment basis as opposed to a water district basis.

Schumaker & Company understands that a slightly different process was used to prioritize capital projects in the 2008 budget year. According to PAWC management in the development of the development of the PAWC's 2008 main replacement capital program was as follows:

- ◆ District-level main replacement rates were determined, based primarily on the average main breaks per mile experienced over the 2003-2007 period and subsequently prioritized.
- ◆ Planned replacement footage and expenditure amounts were developed for each district based upon current pipeline replacement costs.
- ◆ Aggregated district expenditures levels were then reconciled with the statewide budget allocation. In certain instances, district level adjustments were made to more accurately reflect needs not identified in the above-referenced process.
- ◆ PAWC used a prioritized approach for its 2008 main replacement capital program based on desired main replacement rates and footages developed at a district level.
- ◆ Individual pipe projects were ranked in accordance with the main prioritization model. Highest ranked projects within each district were funded up to the planned district expenditure amounts.



Nonetheless, Schumaker & Company consultants still have some concerns with the process that is presented above.

- ◆ District-level main replacement rates were determined, based primarily on the average main breaks per mile experienced over the 2003-2007 period and subsequently prioritized. However, we are not sure what prioritization is involved in this process.
- ◆ Highest ranked projects within each district were funded up to the planned district expenditure amounts. However, this is still different from having the highest-ranked projects across the state funded to the state-wide expenditure level.

PAWC management believes that utilization of main replacement rates and footages is a more accurate way of determining desired district-level funding than utilization of main break percentages, because resultant district expenditure levels are influenced by pipeline replacement unit costs which vary by district and are dependent upon specific project characteristics. PAWC management indicated that they will continue further development of its methodology to consider other performance and service factors associated with the main asset which would be an area for the PaPUC to investigate during the follow-up review.

8/7/2008

Schumaker & Company

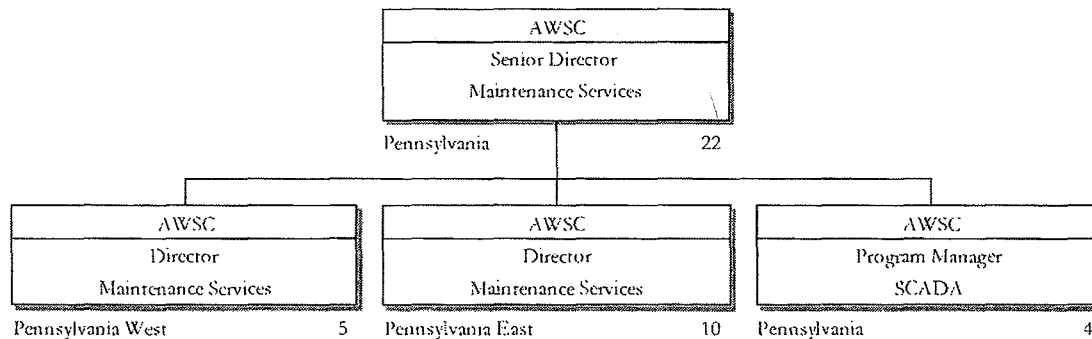


C. Maintenance Services

Background & Perspective

The Maintenance Services Department is responsible for two major activities: (1) development and maintenance of the supervisory control and data acquisition (SCADA) system and (2) the establishment of a proactive maintenance program throughout PAWC. PAWC has an in-house staff that has implemented and supported the PAWC SCADA system. PAWC employees within the maintenance services area are directly responsible for performing various testing on equipment and recording results according to a schedule to drive the proactive maintenance program. Maintenance Services Department is organized as shown in *Exhibit V-25*.

Exhibit V-25
PAWC Maintenance Services Organization
as of December 31, 2007



Source: Information Response 635

Findings & Conclusions

Finding V-7 PAWC has implemented a good proactive production equipment maintenance program.

The purpose of PAWC's proactive production equipment maintenance program is to utilize a strategy that includes predictive, preventive, and reactive maintenance in a combination to yield optimum equipment process reliability and maximum financial return.

The proactive maintenance program has been primarily achieved by ranking systems and individual equipment according to their operational impact. Once this ranking is done, each piece of equipment is then placed into

a matrix that identifies maintenance practices. That matrix is arranged as follows: predictive, preventive, reactive, and maintenance improvement. The particular equipment that is assigned to one or more of these maintenance practice quadrants is dependent upon that equipment's ability to attribute to "cost savings if failure is avoided" versus "losses due to failure risk."

- ◆ Equipment that is identified for predictive maintenance practices, such as vibration analysis, thermographic inspections, and motor winding analysis, will have maintenance functions performed based on actual machine "condition," not time. The actual condition of the machine will dictate when maintenance can be done in-house versus when it is necessary to send it out to an authorized service shop.
- ◆ Equipment that is identified for preventive maintenance practices, such as tighten, lubricate, clean, and check for excessive noise, heat, arcing contacts, etc., has maintenance performed on a "time" or as-needed basis. This practice is primarily done in-house.
- ◆ Equipment that is identified for reactive maintenance is equipment that can be "run to fail" items. This equipment poses no threat to operational impact if it does fail and is usually a shelf item that can be obtained quickly. There is no value in doing programmed maintenance here. This work is usually done in-house.
- ◆ Equipment that is identified as needing maintenance improvement is equipment that shows low reliability but does not have an additional impact on cost if it is allowed to degrade. Areas of improvement include upgrading to stainless steel impellers, remote terminal units (RTUs)/SCADA, ultrasonic level indicators, mechanical seals, etc. Improvements, when possible, are made to design and installation, which allows for easier access when maintenance and repair work is needed.

All of the above-named maintenance practices are done exclusively by in-house personnel. Predictive maintenance, such as vibration analysis, motor winding analysis, ultrasonic testing, and thermographic inspections, is performed by full-time PAWC employees who are Institute Certified Specialists. Preventive, reactive, and maintenance improvements are done by trained plant personnel in conjunction with the Specialists and plant management.

A sample of the type of information that is being developed and reported as a part of this program is shown in *Exhibit V-26*.



Exhibit V-26
Sample Condition-Based Maintenance Test
as of December 31, 2007**American Water**
Maintenance Services Department
Quantitative Thermal Exceptions Report

Facility	PAWC - Uniontown	Date	8/16/2005	Time	8:18:02 AM	Exception	1
Thermographer	Joseph A. Washinski	Certification Level I	#6805				

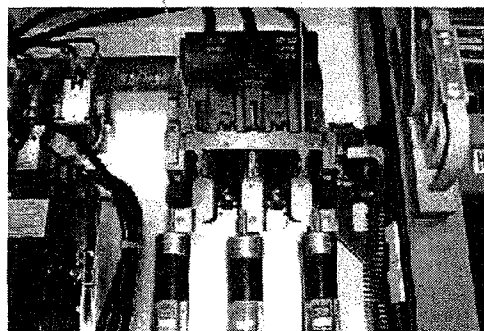
Location
West End BoosterEquipment Tested
#2 Booster Motor StarterException Description

Infrared located a "Hot Spot" on the "A" Phase of the main disconnect switch for #2 Booster Starter.

Severity Rating

2

Ambient	20.0 C
Reference Spot 1	43.1°C
Hot Spot 2	69.4°C
Hot Spot 3	-
Degree Rise	26.32

Voltage and Current Readings:

Phase AB	Phase AC	Phase BC
XX.X	XX.X	XX.X
Leg "A"	Leg "B"	Leg "C"
XX.X	XX.X	XX.X

Corrected Maintenance Action
After removing Incoming Power to disconnect, clean and inspect "stabs" and check for uniform tightness, and re-inspect.

Source: Information Response 131



Finding V-8 Although PAWC has implemented a good proactive production equipment maintenance program, it has failed to implement a computerized maintenance management program at the production facilities.

At this time, each production plant manages its own plant maintenance programs without the benefit of a standardized business process, be it paper-based or computer-based. American Water and PAWC are in the process of implementing a computerized plant maintenance management system and although we have reviewed a draft business case for this project, it is too early to assess the results of this effort.

Recommendations

Recommendation V-3 Implement a computerized maintenance management system in conjunction with the proactive production equipment maintenance program. (Refer to Finding V-8.)

Schumaker & Company consultants recognize that PAWC is in the process implementing this system. The Maintenance Services area of AWWC has been given responsibility for the implementation of the computerized maintenance management system (CMMS). AWWC is in the process of implementing a third party maintenance program from an outside vendor. This software product has already been implemented on the unregulated side of AWWC. Naming conventions and business processes are currently being standardized throughout AWWC such that the system can be implemented in a common manner across AWWC including PAWC. A pilot is expected to be operational this summer in the Glen Alsace district and then rolled out across the state over the next several years. During the follow-up MEI review, the PaPUC should review the progress made on this project.

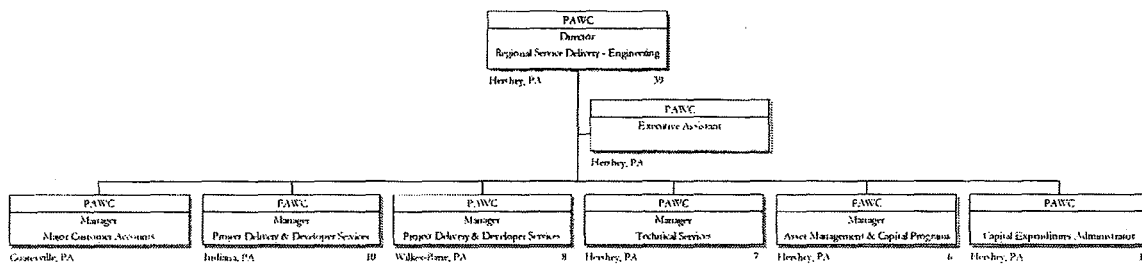


D. Engineering Department

Background & Perspective

The Engineering Department is organized as shown in *Exhibit V-27*.

Exhibit V-27
PAWC Engineering Department Organization
as of December 31, 2007



Source: Information Response 257

The Engineering Department is organized into three major areas, specifically asset and capital planning (central coordination for all of the asset planning located in Hershey), project delivery and developer services (engineering and project oversight services with individuals located throughout the PAWC service territory), and technical services (subject matter experts on specific technologies or equipment used by PAWC). These areas are briefly described below.

- ◆ Asset & Capital Planning
 - Strategic long-range water system planning – comprehensive planning study (CPS)
 - Tactical asset planning and system capacity evaluations
 - Capital program administration
 - Operational needs planning
 - Investment analysis
 - Asset investment plans (five-year Strategic Capital Expenditure Plan (SCEP)) and project prioritization
 - Maintenance of network asset records (inventory, hydraulic models, geographic information systems (GIS)/maps)
- ◆ Project Delivery & Developer Services
 - Capital project management
 - Capital project development, documentation, and forecasting

- Project permitting
- External resources procurement and management
- ◆ Technical Services
 - Technical standards, policies, and procedures – critical knowledge management liaison
 - Center-of-practice responsibilities (Subject Matter Experts – SMEs) for designated technical areas
 - Technical studies, design, and design management to support project delivery and operations
 - Construction management services to support project delivery
 - Training, consultancy, troubleshooting, event support
 - Business development support

Findings & Conclusions

Finding V-9 The Engineering Department generally conducts formal, comprehensive planning studies on a periodic basis for each water district.

The Engineering Department performs comprehensive planning studies on a periodic basis for each of the water districts. These studies review everything from source of water supply to treatment facilities, water delivery systems, and other items. They constitute a formal look at all aspects of a water district and serve as a baseline study from which specific engineering and construction projects are identified for future implementation. *Exhibit V-28* contains a list of all of the studies that have been performed regarding PAWC facilities. However, it is interesting to note that Pittsburgh has not had a comprehensive planning study conducted in over 18 years. PAWC management indicated that they expect to be conducting a CPS for Pittsburgh in the near future.

These studies not only serve as a baseline document, but are also reviewed periodically for any major changes that might precipitate the need to perform another CPS or a small investigation of a particular aspect of a water district. Such investigations might include performing a water needs and source study, a hydrogeology study, or some other form of study as shown in *Exhibit V-28*.



Exhibit V-28
PAWC Inventory of Comprehensive Planning Studies and Other Studies
as of July 2007

District No.	Operating Area	Study Title	Date	Author
53	Abington	CPS	2002	Sys Eng
55	Bangor	CPS	1999	Sys Eng
55	Bangor/Nazareth	Supply Alternatives	2004	Sys Eng
73	Berwick	CPS	1996	Sys Eng
25	Brownsville	CPS	1998	Sys Eng
33	Butler	CPS	2000	Sys Eng
33	Butler	Water Needs and Source	2007	PAW
43	Clarion	CPS	1998	Sys Eng
65	Coatesville Water	Water Needs and Source	2005	PAW
65	Coatesville Water	Alternatives Study	2006	PAW
23	Connellsville	CPS	1997	Sys Eng
91	Crystal Lake	CPS	2001	Sys Eng
31	Ellwood City	CPS	2000	Sys Eng
31	Ellwood City	Water Needs and Source	2007	PAW
74	Frackville	CPS	1996	Sys Eng
74	Frackville	Source of Supply Study	2001	Sys Eng
74	Frackville	Safe Yield Study	1996	R.E. Wright
63	Glen	Water Needs and Source	2004	PAW
71	Hershey	Water Needs and Source	2003	PAW
71	Hershey	CPS	1996	Sys Eng
62	Hershey	Demand Projections	2005	Sys Eng
62	Hershey	Demand Update	2007	PAW
41	Indiana	CPS	1997	Sys Eng
46	Kane	CPS	1999	Sys Eng
44	Kittanning	CPS	1997	Sys Eng
66	Lake Heritage	CPS	2006	PAW
21	McDonald	CPS	1997	Sys Eng
61	Mechanicsburg	CPS	1998	Sys Eng
71	Milton	CPS	1997	Sys Eng
71	Milton	Milton WTP Treatment Study	2000	Gannett Fleming
22	Monongahela	CPS	1997	Sys Eng
54	Monroese	CPS	1998	Sys Eng
31	New Castle	CPS	2000	Sys Eng
51	Norristown	CPS	1996	Sys Eng
72	Philipsburg	CPS	1997	Sys Eng
72	Philipsburg	Water Needs and Source	2007	PAW
72	Philipsburg	Hydrogeologic Study	2005	Meiser & Earl
72	Philipsburg	Moshannon Valley District Safe Yield	2000	Gannett Fleming
72	Philipsburg	Source of Supply	2000	Gannett Fleming
72	Philipsburg	Drane Study	2002	PAWC-Eng
11	Pittsburgh	CPS	1989	Sys Eng
11	Pittsburgh	Water Needs and Source	2005	PAW
57	Pocono-Pike	CPS	2001	Sys Eng
57	Pocono-Pike	Water Needs and Source	2007	PAW
42	Punxsutawney	CPS	1997	Sys Eng
63	Royersford	Water Needs and Source	2007	Sys Eng
91	Scranton/Chinchilla	CPS	2001	Sys Eng
63	Spring Twp	Water Needs and Source	2005	Sys Eng
54	Susquehanna/Hallstead	CPS	1998	Sys Eng
54	Thompson	CPS	1998	Sys Eng
23	Uniontown	CPS	1997	Sys Eng
22	Valley	CPS	1997	Sys Eng
45	Warren	CPS	1998	Sys Eng
21	Washington	CPS	1997	Sys Eng
52	Yardley	CPS	2001	Sys Eng
52	Yardley	CPS	1996	Sys Eng
52	Yardley	Update	2005	Sys Eng

Source: Information Request 147

Finding V-10

With the most recent budgeting process (2008 Budget Year), the Engineering Department has implemented a more analytical main replacement decision-making methodology.

PAWC's distribution system improvement program currently addresses replacement or rehabilitation of small diameter mains (six inches and under) that have reached, or are nearing, the end of their useful life and larger diameter mains (eight inches and over) that are experiencing performance-related issues (e.g., high number of breaks). American Water replaces older, small-diameter mains to resolve customer service and reliability issues and to restore hydraulic capacities within its distribution system. Small diameter mains represent 35% of PAWC's distribution system, and at least two-thirds of the small-diameter mains are made of cast iron, with approximately 40% being unlined cast iron pipe (pre-1930s) that are nearing the end of their useful life. As these pipes continue to age, they tend to break more often, thereby leading to customer service disruptions and a general inconvenience to the public. Approximately 75% of PAWC's reported water main breaks/leaks are associated with these small diameter mains, with a disproportionately greater frequency of main break/leaks on four-inch and under pipe sizes. In addition to having a high break rate, they have low carrying capacity and can contribute to water-quality problems.

As in the case with smaller-diameter mains, performance-related issues associated with larger-diameter mains constitute a key driver for replacing or rehabilitating these mains. Although the frequency of leaks/breaks on large-diameter mains is significantly less than that of smaller-diameter mains, when a break does occur on a large-diameter main, customer service and reliability issues, together with associated liability and remediation expenses, are greater. Larger-diameter main projects are evaluated on a case-by-case basis regarding replacement versus rehabilitation options. Generally, open trench-pipe installation is the most cost-effective and frequently used when unobstructed site conditions allow for a new parallel main installation and significant service work is involved. Rehabilitation is considered if service work is limited, the hydraulic needs of the distribution system can be satisfied, and the cost is favorable to rehabilitate.

Capital investment programs and projects are needs based and prioritized within a strategic-planning process that utilizes drivers associated with various asset-investment strategies (such as regulatory compliance, reliability, capacity, customer satisfaction, etc.) Within a five-year strategic capital expenditure plan, American Water has established longer-term funding levels for main replacement/rehabilitation based on program needs.

On an annual basis, funding levels are established at a district level that is consistent with a detailed implementation plan. PAWC uses a state-wide method for assessing and prioritizing distribution-system-improvement projects as part of AWWSC's overall capital program. The main replacement prioritization process is based on standardized, weighted-performance factors such as leaks/breaks and a qualitative assessment of the value of the improvements in terms of water quality, flow capacity, and service reliability. During such assessments, consideration is given to the potential for coordination with street-paving work.



For the 2008 capital budget, PAWC has developed a more quantitative approach for prioritization main replacement projects. The Excel spreadsheet model uses a pairwise comparison (weighting of pipe segment attributes) of various factors—such as decade installed, existing diameter, joint type, and approximately 20 other variables—to calculate a weighted score for the purpose of prioritizing projects once they have been identified by field personnel.

Recommendations

Recommendation V-4 Continue to develop a risk-assessment-based approach for identifying main replacement projects. (Refer to Finding V-9.)

The year 2008 will be the first year for which a risk-assessment model has been used in the prioritization of main replacement projects. Much of the information for the model needs to be manually collected by field personnel from various company records for the model to be used. If this process were more automated, the whole water distribution system, not just the projects identified by field personnel based on their memory, could be more easily analyzed.

Recommendation V-5 Continue to periodically perform CPS studies. (Refer to Finding V-9.)

PAWC has no preset schedule for performing comprehensive planning studies (CPS) for each water district. According to PAWC management, CPS studies are periodically reviewed to identify if there are any significant changes that would warrant the performance of a new comprehensive planning study for a water district. These reviews should be documented and schedules created to ensure that these documents are formally reviewed on a periodic basis.

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SubDocket No:NONE
File Type:CASE
Filing Party Name:Theresa Davis
Filing Party Email:tdavis@oucc.in.gov
Date/Time Filed:10/27/2009 4:17:29 PM
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